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2000-04-06	General instructions	Senator, Royal, President, Pro 16, Pro 18 and Pro 20	1	1

1 General instructions

This Workshop Manual is intended for the following models of Stiga Park:
Senator, Royal, President, Pro 16, Pro 18 and Pro 20.

The Workshop Manual contains the following chapters:

Chapter 1	General instructions	Chapter 6	Electrical system
Chapter 2	Engine	Chapter 7	Power take-off
Chapter 3	Chassis & body	Chapter 8	Transmission
Chapter 4	Steering	Chapter 9	Mower deck
Chapter 5	Controls and instruments		



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1.1 General information, safety instructions

This manual has been written primarily for trained mechanics working in a well-equipped workshop. Nevertheless, the manual contains such detailed information that it can also be of use to owners who wish to carry out simple service and repairs on their machine.

A basic knowledge of repairs, tools and repair instructions is, however, always a prerequisite for first-rate results.

A qualified mechanic should always be consulted if the owner does not have sufficient knowledge to carry out repairs.

During the warranty period all service must be carried out by an Authorised Stiga Workshop for the warranty to be valid.

The following basic points should be observed if the machine is to function perfectly:

- Follow the service schedule
- Be on the alert for sudden vibrations or abnormal noise to avoid major breakdowns
- Always use Stiga Genuine Spare Parts
- Follow the descriptions in this manual carefully. Do not take any short cuts.

How this manual is used

To make this manual easy to understand we have divided up the machine into its main systems and components. These parts are now the different chapters in the book. The chapters have the same division and contents as the list of spare parts. Each chapter is divided up into sections. There is a quick-guide on the cover of this book, which refers to the different chapters. In each chapter there is a detailed table of contents so that you can easily and quickly find what you are looking for.

For example, if you are looking for information on the Accessory Lifter you will find this in chapter 3, Chassis and Body. On the first page in chapter 3 there is a detailed table of contents which refers to the correct section, in this case section 3.1.

Always check that you are reading the right chapter for your particular machine before starting the repair work.

Symbols and general warnings



Warning

This symbol indicates a risk of personal injury or damage if the instructions are not followed.

Note!

This text indicates a risk of damage to the material or risk of unnecessarily complicated work if the instructions are not followed.

In spite of the great care we have taken there may be errors in this publication.

Stiga AB cannot be made liable for incorrect or missing information.

Stiga AB reserves the right to regularly change product specifications without prior notice. All the information in this book is based on the information available at the time of production. Illustrations and photographs may be arranged schematically, which implies that one picture may cover several models and therefore not correspond exactly with all models.

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Other recommendations

Warm parts

Please observe that engine and exhaust system picks up a lot of heat during use. This applies above all to the silencer of machines equipped with catalytic converter.

To avoid injuries, allow the machine to cool before any kind of repairs are made to or near parts of the engine or exhaust system.

Moving parts

The machines are all equipped with v-belt transmissions. Always stop the engine and remove the starter key before inspections or repairs are carried out.

Always use extreme caution when testing systems with moving parts to avoid injuries.

Lifting and blocking up

Before work under the machine, always make sure that lifting devices and jack-stands are approved for the weight. Work safe!

Cleanliness

Clean the machine before starting repairs. Dirt that penetrates into sensitive components can seriously influence the service life of the machine.

Tightening torque

Unless otherwise stated the tightening torque in the tables in the section Technical specifications must be used for the different sizes of screws. This does not refer to self-tapping screws, which are mainly used for the assembly of body parts.

Sharp edges

Watch out for sharp edges, especially when working with the mower deck. The blades can be very sharp. Always wear gloves when working with the blades.

Replacement parts

Always use Stiga Genuine Spare Parts during service work.

Inspection

Each part dismantled in conjunction with service work must be inspected.

Examine for: wear, cracks, out of roundness, straightness, dents, discolouring, abnormal noise and jamming.

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1.2 Assembly on delivery

Every Stiga Park has undergone an extensive control programme before delivery. The machines are delivered as completely assembled as possible.

Thanks to this the assembly on delivery is rapid and easy.

The correct and careful assembly of the machine on delivery is a simple way of ensuring satisfied customers!

Procedure

The following points should be followed to ensure rapid and correct assembly on delivery, preferably in this order:

1. Open up the packing materials.



2. Lift off the engine cover

Battery



Warning!

If the battery is used without acid it will be severely damaged immediately. Battery acid is strongly corrosive.

The battery acid should be filled in a well-lit area where there is access to a plentiful supply of water. Always use rubber gloves and protective glasses, and handle the acid with extreme caution to avoid spillage. Avoid inhaling the acid fumes. Acid can burn the skin and damage metal objects and clothes.

The machine is delivered with a dry-charged battery. The battery must be filled with acid before it can be used.



The battery is in position under the engine cover on delivery. To avoid damage resulting from spilled acid the battery must always be dismantled before it is filled.

Fill up with battery acid. The acid level should lie between the UPPER and LOWER markings on the battery. The acid level may drop somewhat after filling. Wait twenty minutes and then check the acid level in all the cells.

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Do as follows

1. Remove the seat that lies under the machine.
2. Cut off the plastic strap round the wheels.
3. Roll the machine off the pallet.

Assembly of steering wheel

1. To avoid tensions in the steering wheel bearing it is important to use the correct shims during assembly. Put the steering wheel on first without tapping in the tension pin.
2. Press up the steering column as far as possible by pressing on the chain sprocket under the floor plate.
3. Check that the hole in the steering column and the hole in the steering wheel coincide, or whether it is necessary to use shims to get the holes in line.
4. Lift off the steering wheel, insert one or more shims, replace the steering wheel again and then tap in the spring pin. The machine is delivered with two shims, one with a thickness of 0.5 mm and one with a thickness of 1.0 mm. Also make sure that the logo on the steering wheel is in the correct position.



Assembly of seat

1. Fit the seat switch with the two screws (Senator and President only).



2. Connect the cables to the seat switch.
3. The switch should be fitted with the connecting pins facing towards the front edge of the seat.
4. Place the seat in position on the seat bracket. Fit the two knobs in the front edge of the seat. Do not forget the washers.



5. Fit the two screws in the rear edge of the seat.

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Arm rest (Pro 20)

The arm rest and the parts for its assembly are delivered in a separate box.

1. Screw tight the left and right supports on the seat by using the six enclosed screws.
2. Fit the height adjusting screw in the arm rest.
3. Fit the arm rests in the supports. A spacer should be placed on each side of the support.
4. Tighten the screws so that the parts do not rattle, but not tight enough to prevent the arm rest from being turned up.

Tyres



The air pressure in the tyres is of critical importance for the performance and handling of the machine. The correct air pressure for mowing is 0.6 bar (9 psi) in the front tyres, and 0.4 bar (6 psi) in the rear tyres. When using heavy accessories, e.g. snow thrower, it may be necessary to increase the pressure somewhat. However, the maximum permitted pressure is always 0.8 bar (12 psi).

Towing plate

Fitting according to customer requirements.

Engine oil

Check the oil level in the engine and top up if necessary.



Test driving

Drive the machine for a few minutes. Test all the functions. Pay special attention to the safety functions. If the machine is to be delivered with mower deck or other accessories, fit these before test driving the machine.

Hydrogear oil

Check the oil level in the hydrogear's expansion tank after test driving, and top up if necessary. (Only applies to Park Pro).



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Steering chain / Steering wire

Check that the steering chain / steering wire is sufficiently taut. Adjust if necessary.

Miscellaneous

Give the machine a general inspection.

- Is the machine clean?
- Is there any oil leakage?
- Abnormal noise or rattle?

Receipt

By filling in the guarantee certificate you guarantee that the delivery service has been correctly conducted.

Remember to make sure that the customer receives all the documentation when the machine is collected / delivered.

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1.3 Warranties

Component warranty, frame

The warranty is valid for up to 10 years from the date of purchase.

Valid for faults that occur on the machine's articulation bearing, and damage to the front and rear frame.

Extended warranty

The warranty period is extended to cover a maximum of 3 years or 300 operating hours.

Conditions for validity of the warranties.

Conditions for all warranties

The fully completed warranty card must be sent to Stiga's subsidiary or distributor.

Conditions for Component warranty, frame

The warranty is valid on the assumption that the stipulated Basic Service has been carried out at an authorised Stiga Service Workshop during the first 3 years or 300 operating hours.

In the event of a claim the service history must be confirmed with a copy of the service book.

Conditions for Extended warranty

The Basic Service must have been conducted at least every 12 months.

If the annual number of operating hours exceeds 100 hours the Basic Service must be conducted at least every 100 hours instead.

The Basic Service must always be conducted at an authorised Stiga Service Workshop.

The Basic Service must always be documented with the stamp of the Stiga Authorised Service in the service book.

Correctly conducted Basic Service entitles an extension of the warranty period to 3 years or 300 operating hours.

The total warranty period, if the above conditions are fulfilled, is a maximum of 3 years or 300 operating hours.

In the event of a claim, the service history must be confirmed with a copy of the service book.

Exemptions

Engines

Standard regulations for claims are applicable for the engines.

Transmissions

Standard regulations for claims are applicable for transmissions.

Other components

V-belts and driving belts, blades, batteries and control wires, are not covered by the extended warranty.

The warranty is not valid for

- Damage that has occurred by accident, negligence, through normal wear, or during transport.
- Machines where repairs have been carried out without Stiga Genuine Spare Parts.

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1.4 Service

A service book accompanies every new Stiga Park. This service book is part of the active post-market programme.

Thanks to the fact that President, Royal, Pro 16, Pro 18 and Pro 20 are equipped with hour counters, it is now very easy for the customer to ensure that the service is carried out in accordance with the manufacturer's recommendations.

Service should generally be carried out at least every 50 operating hours, although in accordance with the conditions below.

The service consists of several parts.

First Service

To be conducted after 5 hours. This service is very important to safeguard the continuing function of the machine.

The following points must be conducted during First Service:

- Battery, check.
- Tyres, air pressure.
- Engine oil, change.
- Oil level in hydrogear, check.
- Belt transmissions, check.
- Steering, adjust.
- Safety check.
- Test driving.

For further instruction on these service points, see the service schedule.

Basic Service

To be conducted at least every 12 months. If the annual number of operating hours exceeds 100 hours the Basic Service must be conducted every 100 hours instead. The Basic Service must always be conducted by an authorised Stiga Service Workshop, and documented with a stamp in the service book.

Intermediate Service

To be conducted every 50 operating hours. This service is not as extensive as the Basic Service and can therefore be conducted by the customer, or by an authorised Stiga Service Workshop. Regardless of who conducts the service, it must be documented in the service book.

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Service schedule	Machine	Inter- mediate Service	Basic Service	Other interval
Exhaust system, check	All		*	
Battery, check	All		*	
Tyres, air pressure	All	*	*	
Electrical system, check	All		*	
Mower deck, check	All		*	
Blades, check	All		*	
Power take-off, check	All		*	
Cooling fins, cleaning	All	*	*	
Bearing boxes, check	All		*	
Air filter, replace	All			If necessary
Air filter, cleaning	All	*	*	
Air filter catalytic converter, cleaning	Pro 18, 20	*	*	
Engine oil, change	All	*	*	
Oil filter engine, replace	Royal, Pro16, 18, 20		*	
Oil hydrogear, change	Pro 16, 18, 20			After 100 hours, and then every 400 hours
Oil filter hydrogear, change	Pro 20			After 100 hours, and then every 400 hours
Oil level in hydrogear, check	All	*	*	
Test driving	All	*	*	After every repair
Control, check	All		*	
Belt transmissions, check	All		*	
Lubrication chassis	All	*	*	
Steering, adjust	All	*	*	
Safety check	All	*	*	
Transmission, check	All		*	
Spark plug, replace	Senator, President.		*	
Spark plug, replace	Royal, Pro 16, 18, 20			Every 12 months
Spark plug, check	All		*	
Speed, check	All		*	

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Description of service points

Exhaust system, check

Check if there are cracks, leakage, or other damage. Check also the attachment devices.

Battery, check

Check the acid level. Top up with distilled water if necessary.

Tyres, air pressure

Check the air pressure. Adjust if necessary.

Electrical system, check

Measure the terminal voltage on the battery when the engine is running at top speed. The voltage should exceed 13V.

Mower deck, check

Check if the deck has any visible signs of collision damage. Check the retaining screws for the bearing boxes. Rotate the blades and check whether the blade shafts are damaged. Check the belt tension, and adjust if necessary. See also chapter 9.

Blades, check

Check if the blades are damaged. Replace if necessary.

Power take-off, check

Check if the power take-off brake functions, see section 7.4.

Check the tension pulley bearings. Check the condition of the belts.

Cooling fins, cleaning

See section 2.8, 2.9 or 2.10 depending on the model.

Bearing boxes, check

Check the bearings for play, seizure and abnormal noise.

Air filter, replace

See section 2.3, 2.4 or 2.5 depending on the model.

Air filter, cleaning

See section 2.3, 2.4 or 2.5 depending on the model.

Air filter catalytic converter, cleaning

See section 2.6.

Engine oil, change

See section 2.2.

Oil filter engine, replace

See section 2.2.

Oil hydrogear, change

See section 8.3 or 8.4 depending on the model.

Oil filter hydrogear, change

See section 8.4.

Oil level in hydrogear, check

See section 8.2, 8.3 or 8.4 depending on the model.

Test driving

Drive the machine for a few minutes. Check the brakes, clutch, engagement of mower deck, steering, cruise control, and safety functions. Vary the speed, and drive if possible on undulating surface. Pay attention to whether there are any abnormal noises or vibrations.

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Control, check

Check all the control functions in terms of play, jamming and adjusting. Further information is provided in chapter 5.

Belt transmissions, check

Check the condition of all the belts and belt tensioners.

Lubrication chassis

See section 3.4.

Steering, adjustment

See section 4.1 or 4.2 depending on the model.

Safety check

Check the safety functions. It is often appropriate to do this check in conjunction with test driving.

Transmission, check

Check if there is any play in the input shaft in the transmission. Does the gearbox / hydrogear function well and without problem?

Spark plug, replace

See the engine manufacturer's instructions.

Spark plug, check

See the engine manufacturer's instructions.

Speed, check

Adjust as per the engine manufacturer's instructions.

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1.5 Technical specifications

Electrical system	Senator	President	Royal	Pro 16	Pro 18	Pro 20
Type	AC & DC	AC & DC	AC & DC	12V DC	12V DC	12V DC
Fuse 1	10A	10A	10A	10A	15A	15A
Fuse 2	10A	10A	10A	10A	15A	15A
Fuse 3	-	10A	10A	10A	10A	10A
Fuse 4	-	-	10A	10A	10A	10A
Fuse 1	Charging current	Charging current	Charging current	Charging current	Charging current	Charging current
Fuse 2	Supply	Supply	Supply	Supply	Supply	Supply
Fuse 3	-	Lighting	Lighting	Lighting	Lighting	Lighting
Fuse 4	-	-	Fuel	Fuel	Fuel	Fuel
Bulb	-	12V / 21W	12V / 21W	12V / 21W	12V / 21W	12V / 21W
Battery	12V, 24Ah	12V, 24Ah	12V, 24Ah	12V, 24Ah	12V, 24Ah	12V, 24Ah
Max. output of the electrical system	AC: 55W (4.5A) DC: 36W (3A)	AC: 55W (4.5A) DC: 36W (3A)	AC: 55W (4.5A) DC: 36W (3A)	DC 190W (16A)	DC 190W (16A)	DC 190W (16A)
Max. output of accessories in total.	55W AC 0W DC	35W AC 0W DC	35W AC 0W DC	110W DC	110W DC	110W DC
Max. output rear power point	-	-	-	110W	110W	110W
Hour counter	-	Yes	Yes	Yes	Yes	Yes
Electric PTO coupling	-	-	-	-	Yes	Yes
Cruise control	-	-	Yes	Yes	Yes	Yes
Switch for rear accessories	-	-	-	A	A	Yes
Cable for rear accessories	-	-	-	Yes	Yes	Yes
Switch for rear power point	-	-	-	A	A	Yes
Cable for rear power point	-	-	-	Yes	Yes	Yes

A: Can be fitted later as accessory.

AC: Alternating current.

DC: Direct current.

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Engine	Senator	President.	Royal	Pro 16	Pro 18	Pro 20
Manufacture	Briggs& Stratton	Briggs & Stratton	Briggs & Stratton	Briggs & Stratton	Briggs & Stratton	Briggs & Stratton
Type	I/C	I/C	INTEK	Vanguard	Vanguard	Vanguard
Model	286700	286700	406700	303700	350700	351700
Output Hp/kW	12.5 / 8.8	12.5 / 8.8	16 / 11.8	16 / 11.8	18 / 13.2	20 / 14.7
Oil filter	-	-	Yes	Yes	Yes	Yes
Oil volume	1.4 L	1.4 L	1.8 L	1.6 L	1.6 L	1.6 L
Viscosity, summer	SAE 30	SAE 30	SAE 30	SAE 30	SAE 30	SAE 30
Viscosity, winter	10W-30	10W-30	10W-30	10W-30	10W-30	10W-30
Service class, oil	SF, SG, SH	SF, SG, SH	SF, SG, SH	SF, SG, SH	SF, SG, SH	SF, SG, SH
Type of fuel	Unleaded	Unleaded	Unleaded	Unleaded	Unleaded	Unleaded
Min. fuel grade	77	77	85	85	85	85
Tank gauge	A	A	Yes	Yes	Yes	Yes
Catalytic converter	-	-	-	A	Yes	Yes

A: Can be fitted later as accessory.

Steering	Senator	President	Royal	Pro 16	Pro 18	Pro 20
Chain – wire	Yes	Yes	Yes	-	-	-
Chain – Chain	-	-	-	Yes	Yes	Yes
Power assisted	-	-	-	-	-	Yes
Steering wheel knob	-	-	-	-	-	Yes
Adjustable steering column	-	Yes	Yes	Yes	Yes	Yes

Accessory lifter	Senator	President	Royal	Pro 16	Pro 18	Pro 20
Foot regulated	Yes	Yes	Yes	Yes	Yes	Yes
Power assisted	A	A	A	A	Yes	Yes

A: Can be fitted later as accessory.

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Chassis	Senator	President	Royal	Pro 16	Pro 18	Pro 20
17" wheel	-	-	-	Yes	Yes	Yes
16" wheel	Yes	Yes	Yes	-	-	-
Front wheels housed in ball bearings	-	-	-	Yes	Yes	Yes
Front wheels housed in sliding bearings	Yes	Yes	Yes	-	-	-
Comfort seat	Yes	Yes	Yes	-	-	-
Comfort seat with high back rest	-	-	-	Yes	Yes	Yes
Seat suspension	Yes	Yes	-	-	-	-
Comfort suspension	-	-	Yes	Yes	Yes	Yes
Arm rest	-	-	-	A	A	Yes
Folding seat	Yes	Yes	Yes	Yes	Yes	Yes
Length (cm)	192	192	192	192	192	192
Width (cm)	85	85	85	87	87	87
Height (cm)	117	117	117	124	124	124
Weight (kg)	198	191	198	200	202	204

A: Can be fitted later as accessory.

All dimensions refer to basic machine without accessories.

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2000-04-06	Technical specifications	All	16	1.5

Transmission	Senator	President	Royal	Pro 16	Pro 18	Pro 20
Gearbox 5-1	Yes					
Hydrogear K46	-	Yes	Yes	-	-	-
Hydrogear K62	-	-	-	Yes	Yes	-
Hydrogear K66	-	-	-	-	-	Yes
Manual differential lock	-	-	-	Yes	Yes	Yes
Shaft diameter	19mm / 3/4"	19mm / 3/4"	19mm / 3/4"	25.4mm/1"	25.4mm/1"	25.4mm/1"
Total oil volume	-	1.9 L	1.9 L	2.5 L	2.5 L	2.5 L
Oil volume normal change	-	1.9 L	1.9 L	1.5 L	1.5 L	1.5 L
Oil grade	80W-90	20W-50	20W-50	20W-50	20W-50	20W-50
Hydrogear with replaceable oil filter	-	-	-	-	-	Yes
External oil filter	-	-	-	-	-	Yes
Hydraulic pump for power assisted steering	-	-	-	-	-	Yes
Displacement hydrogear pump	-	7 cm ³	7 cm ³	10 cm ³	10 cm ³	10 cm ³
Displacement hydrogear motor	-	10 cm ³	10 cm ³	10 cm ³	10 cm ³	10 cm ³
Capacity servo pump	-	-	-	-	-	45 Bar, 15L/min
Max. speed km/h	9	10	10	11	11	13

General tightening torque

Unless otherwise stated the following tightening torque are applicable for screws and nuts on the machine:

Thread	Torque
M5	5 Nm
M6	9 Nm
M8	22 Nm
M10	45 Nm

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1.6 Wiring diagram

Safety circuit

Senator

President

Royal, Pro 16

Magnetic switch

Pro 18, Pro 20

Cruise control

Royal, Pro 16, Pro 18, Pro 20

Starting circuit

All

Ignition circuit

Senator, President

Royal, Pro 16

Pro 18, Pro 20

Charging circuit

Senator, President, Royal

Pro 16, Pro 18, Pro 20

Headlight circuit

President, Royal

Pro 16, Pro 18, Pro 20

Shutoff valve

Royal, Pro 16, Pro 18, Pro 20

Hour meter

Royal, Pro 16, Pro 18, Pro 20

Electric cutting height

Pro 16, Pro 18, Pro 20

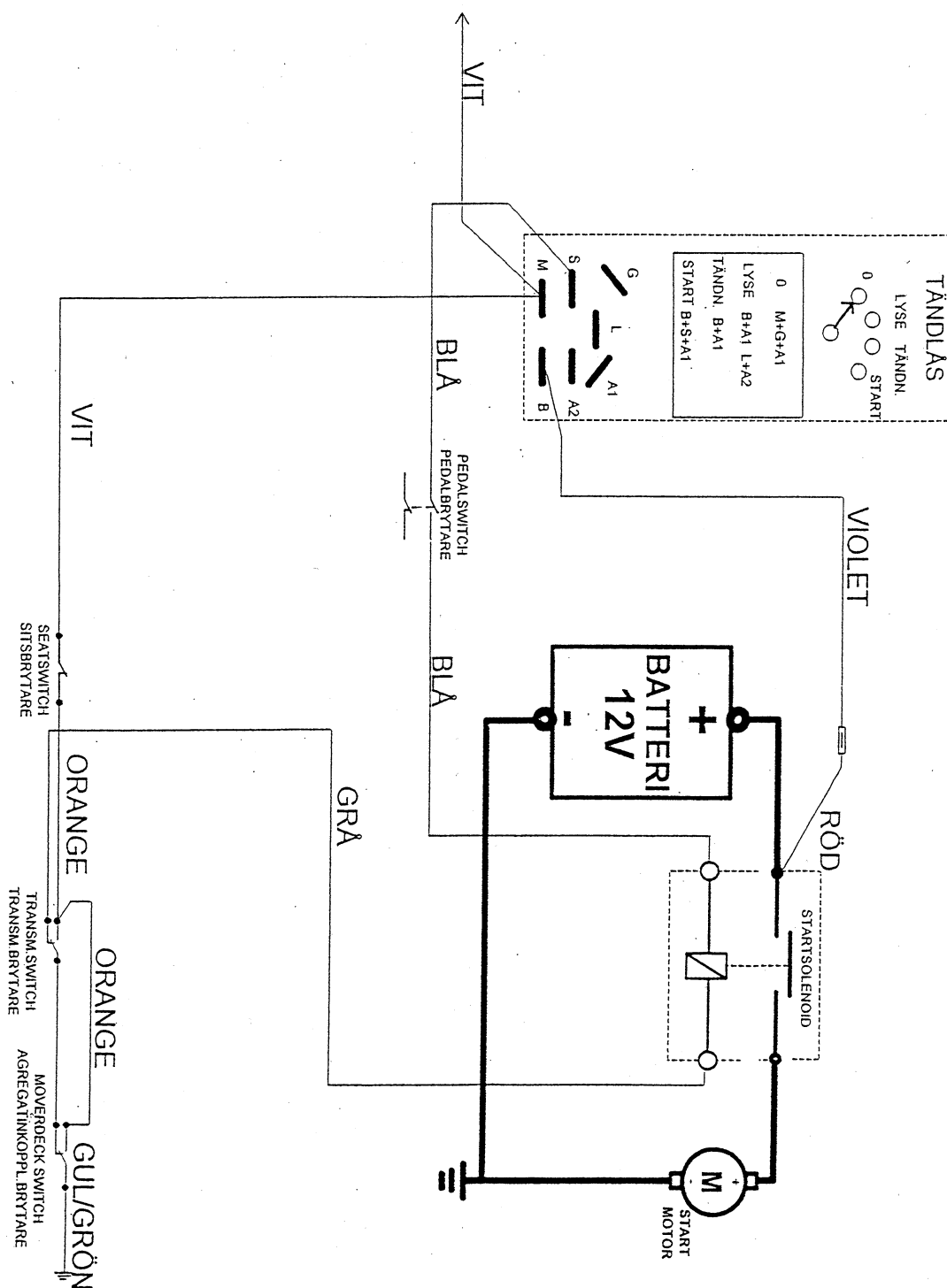
Electrical rear rake

Pro 16, Pro 18, Pro 20

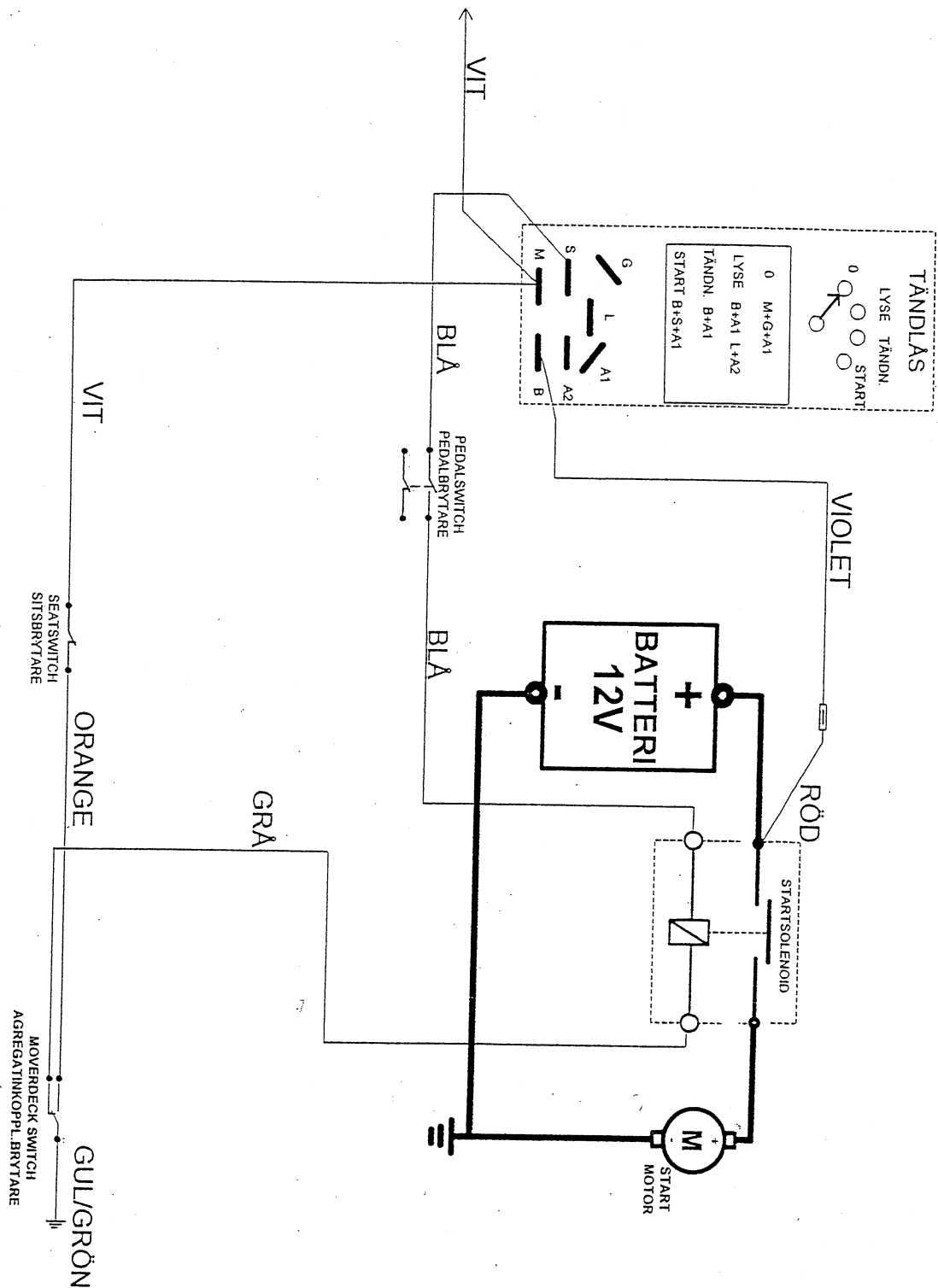
Rear electrical outlet

Pro 16, Pro 18, Pro 20

		Modell / Type		
00-02-14	Säkerhetskrets Safety circuit	Senator		



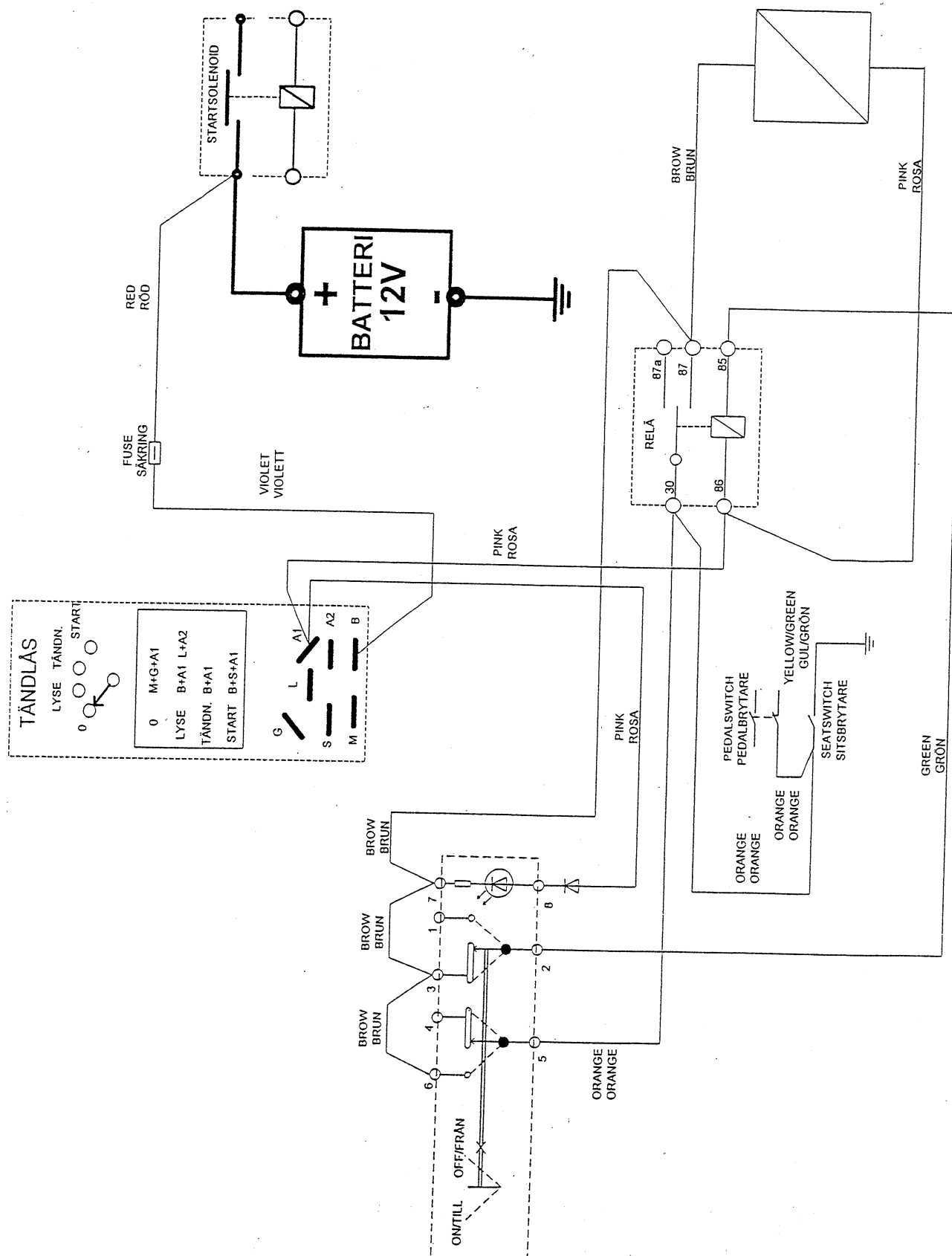
		Modell / Type		
00-02-14	Säkerhetskrets Safety circuit	President		



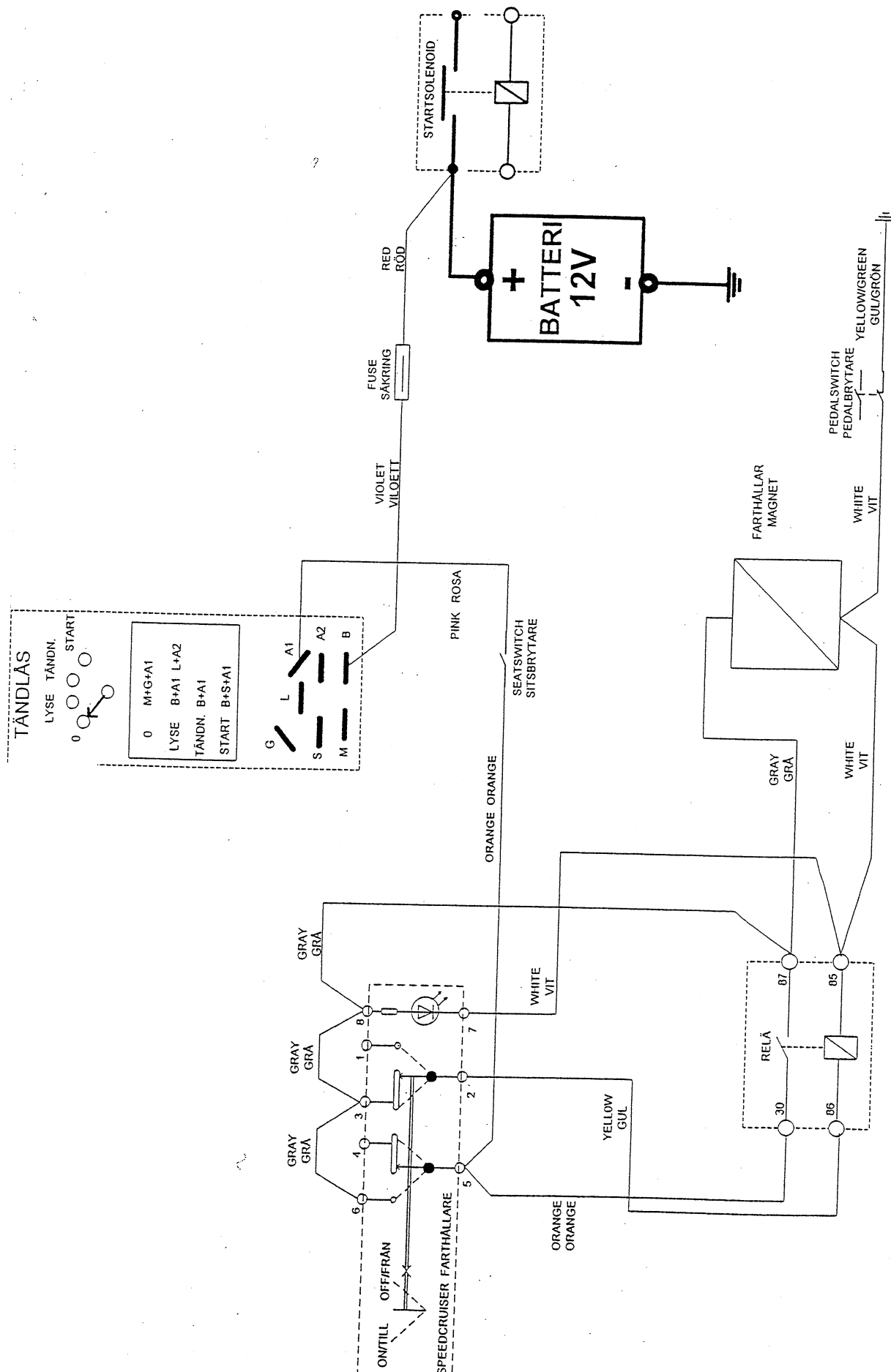
The diagram illustrates the electrical system for a vehicle, centered around a 12V battery. The main components and their connections are as follows:

- BATTERY (12V):** The positive terminal is connected to a red wire (RED RÖD) that passes through a 10A fuse (FUSE SÄKRING 10A) before reaching the start solenoid and the ignition relay.
- IGNITION SWITCH:** A legend shows its positions: 0 (OFF), LIGHT (B+A1 L+A2), LYSE (B+A1), TANDN. (B+A1), and START (B+S+A1). The switch terminals are connected to various colored wires: yellow/green (GUL/GRÖN) to ground, blue (BLÅ) to the seat switch, orange (ORANGE) to the pedal switch, and blue (BLÅ) to the blade switch.
- SEAT SWITCH (SÄTTSBRYTARE):** Connected to the blue wire from the ignition switch and the orange wire from the pedal switch.
- PEDAL SWITCH (PEDALSÄTTSBRYTARE):** Connected to the orange wire from the ignition switch and the orange wire from the seat switch.
- BLADE SWITCH (BLADESÄTTSBRYTARE):** Connected to the blue wire from the ignition switch and the yellow/green wire from the blade switch.
- RELAYS:**
 - RELÄ SÄKERHETSKRETS (SAFETY CIRCUIT RELAY):** Connected to the black wire (BLACK SVART) and the gray wire (GRAY GRÅ).
 - RELÄ SÄKERHETSKRETS (SAFETY CIRCUIT RELAY):** Connected to the black wire (BLACK SVART) and the gray wire (GRAY GRÅ).
 - RELÄ SÄKERHETSKRETS (SAFETY CIRCUIT RELAY):** Connected to the black wire (BLACK SVART) and the gray wire (GRAY GRÅ).
 - RELÄ SÄKERHETSKRETS (SAFETY CIRCUIT RELAY):** Connected to the black wire (BLACK SVART) and the gray wire (GRAY GRÅ).
- SOLID STATE IGNITION SYSTEM:** A schematic showing the ignition coil, distributor, and spark plug, connected to the battery and the ignition switch.

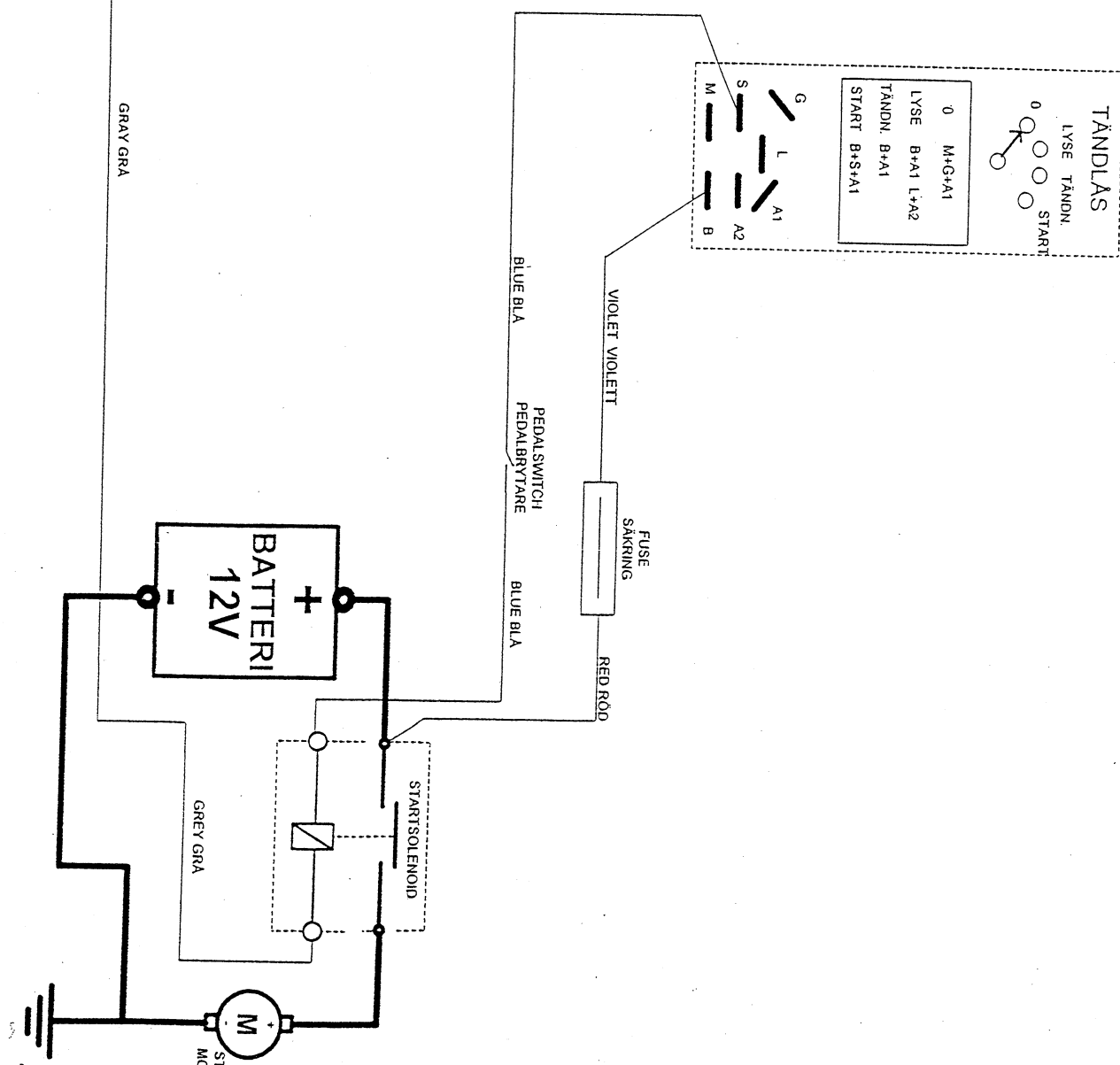
		Modell / Type		
00-02-14	Magnetkoppling Magnetic switch	Pro 18, Pro 20		



		Modell / Type		
00-02-14	Farthållare Cruise control	Royal, Pro 16, Pro 18, Pro 20		

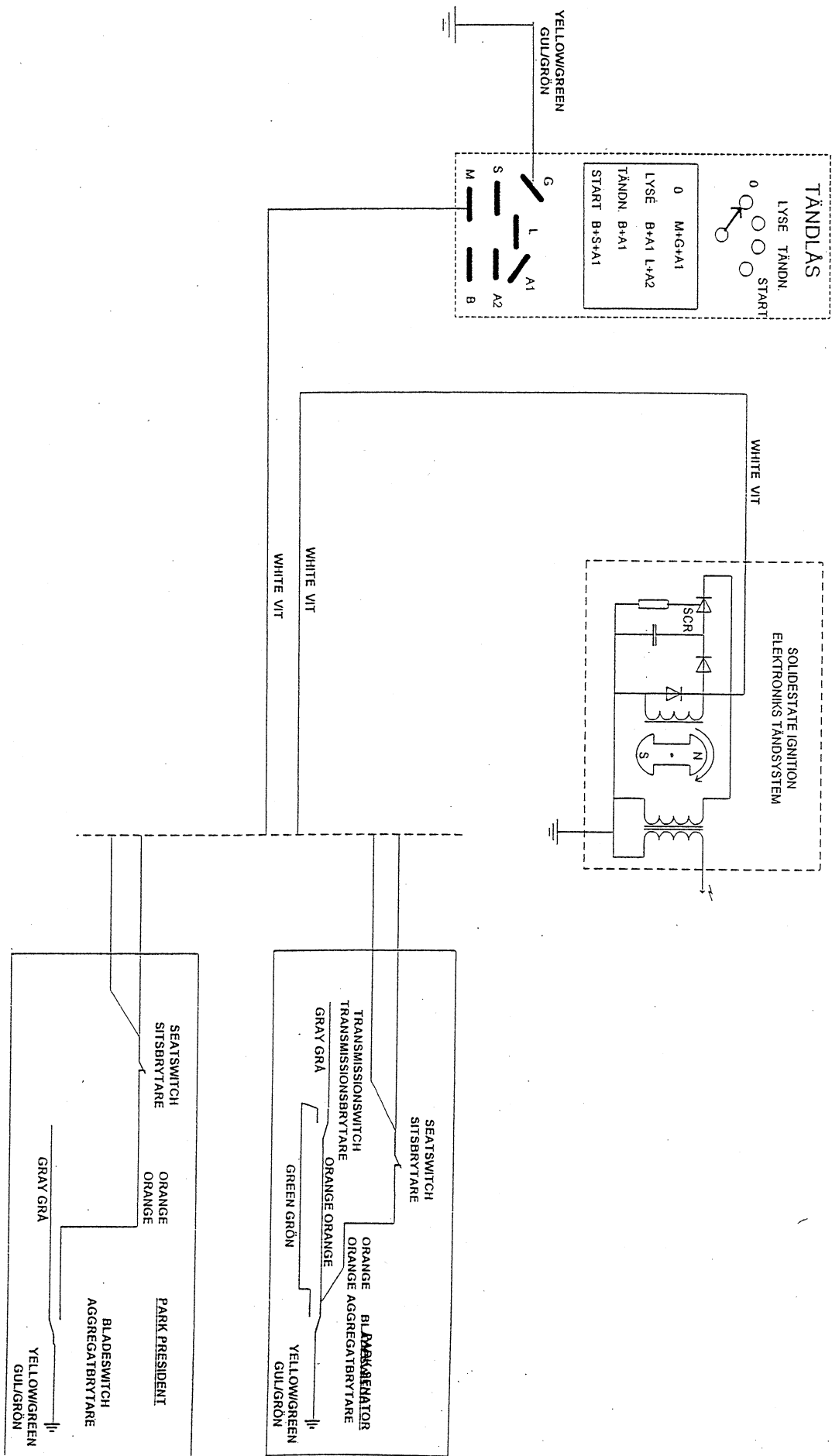


	Modell / Type	
00-02-14	Startkrets Starting circuit	Alla All

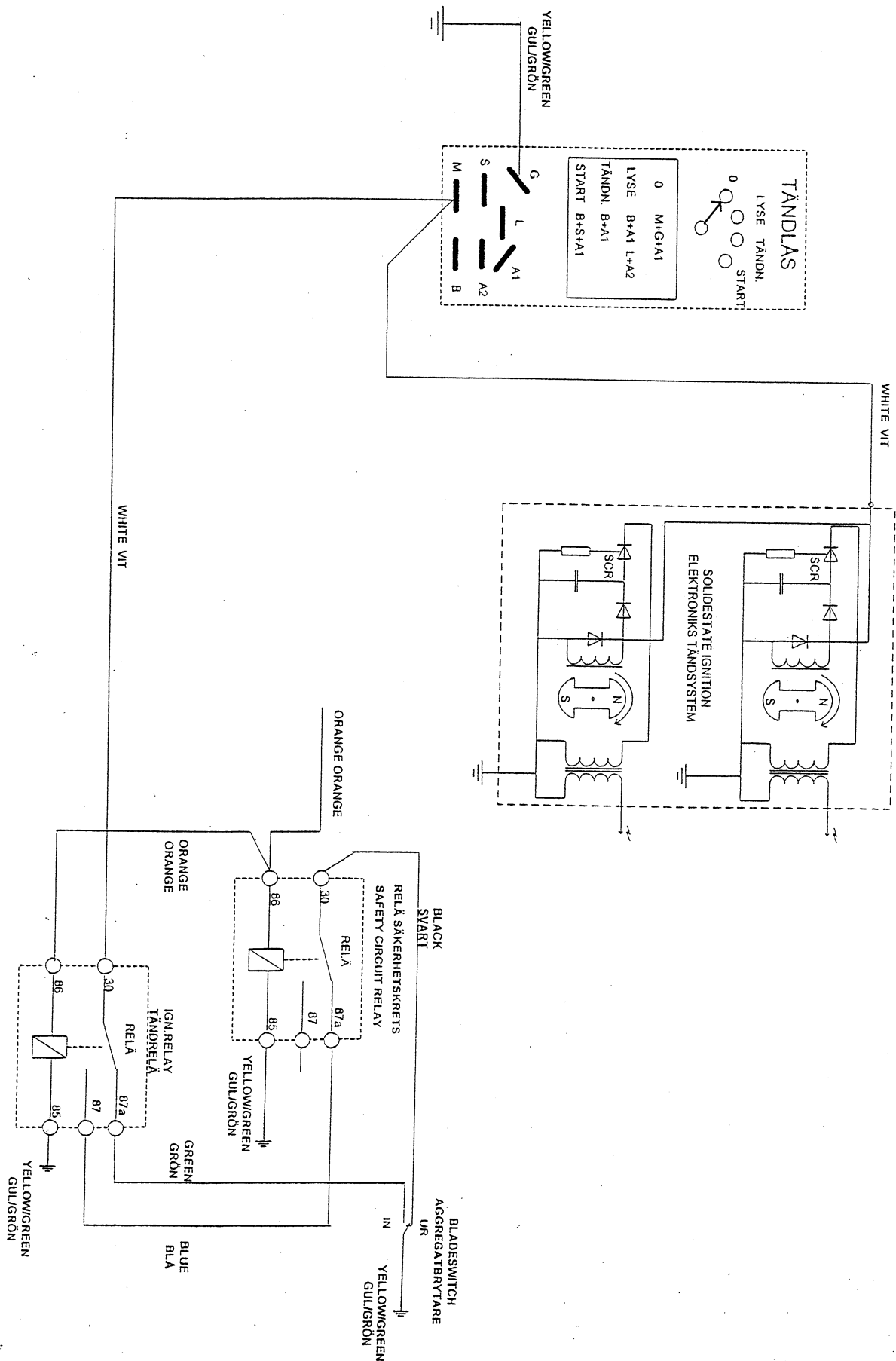




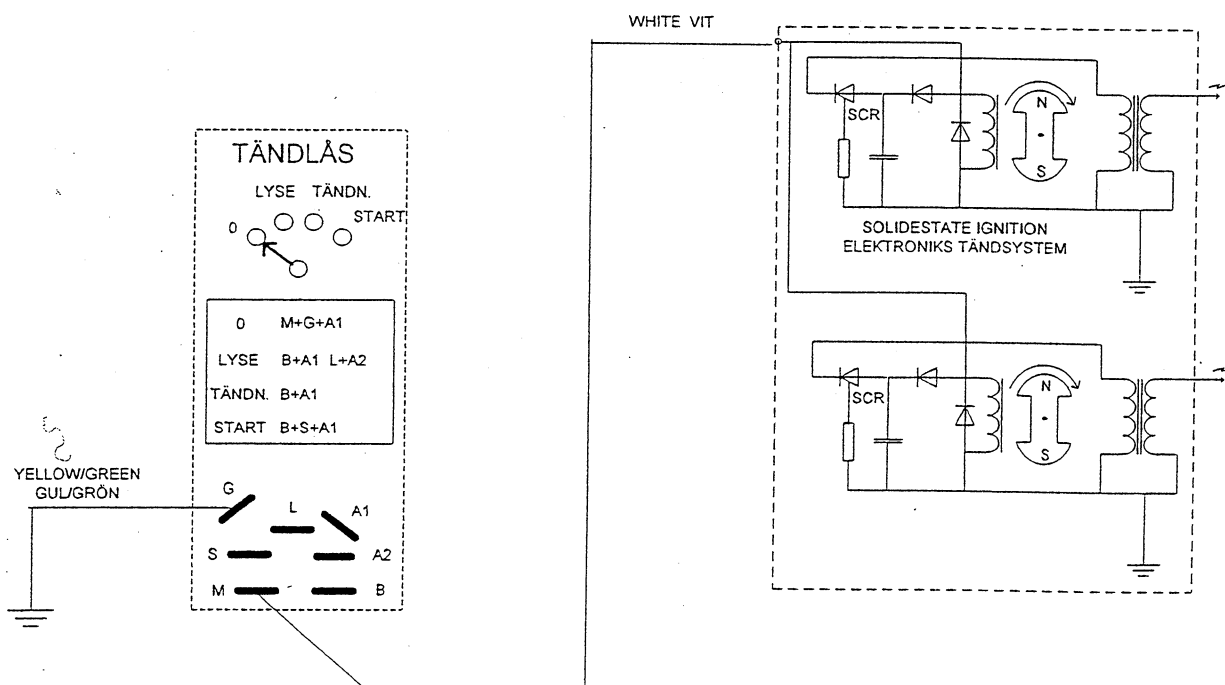
		Modell / Type		
00-02-14	Tändkrets Ignition circuit	Senator, President		



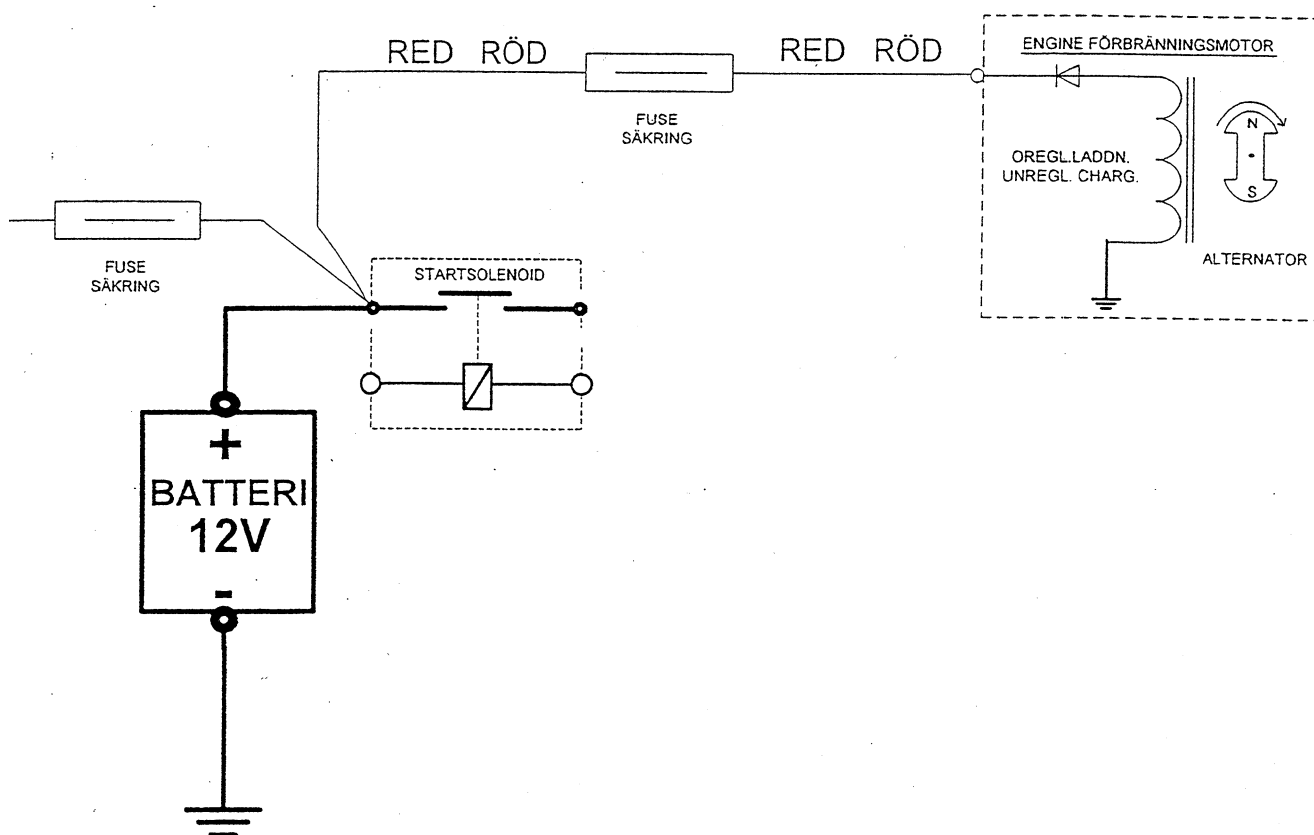
		Modell / Type		
00-02-14	Tändkrets Ignition circuit	Royal, Pro 16		



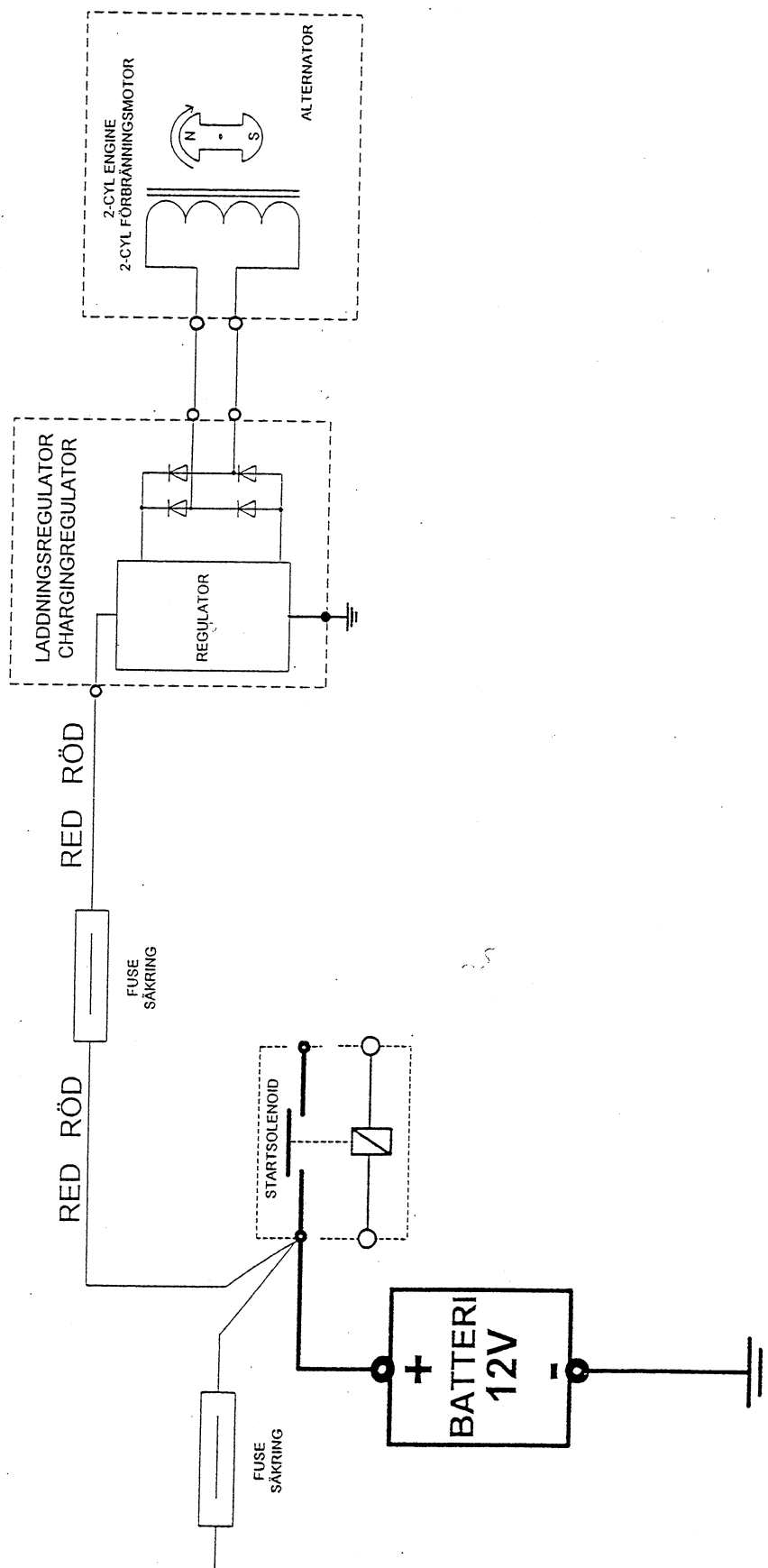
		Modell / Type		
00-02-14	Tändkrets Ignition circuit	Pro 18, Pro 20		



		Modell / Type		
00-02-14	Laddningskrets Charging circuit	Senator, President, Royal		

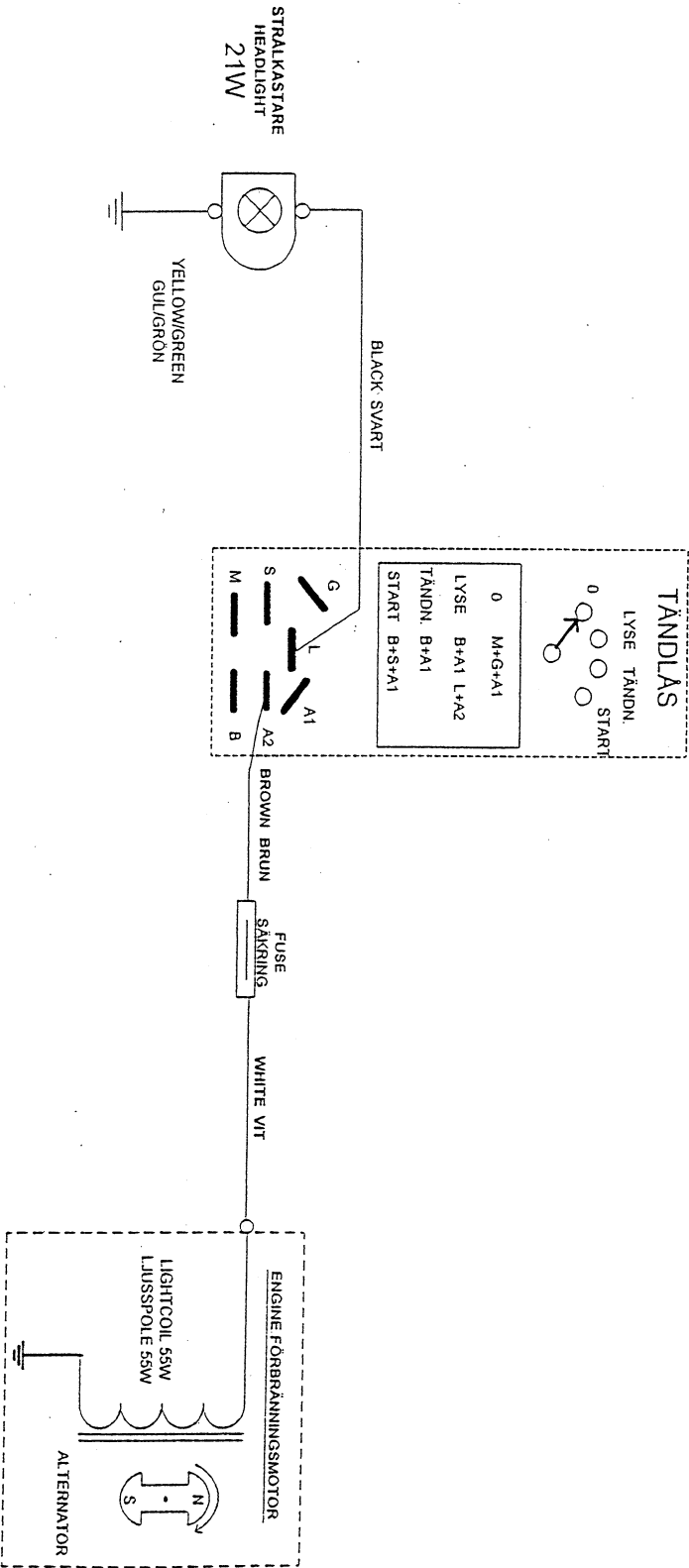


		Modell / Type		
00-02-14	Laddningskrets Charging circuit	Pro 16, Pro 18, Pro 20		

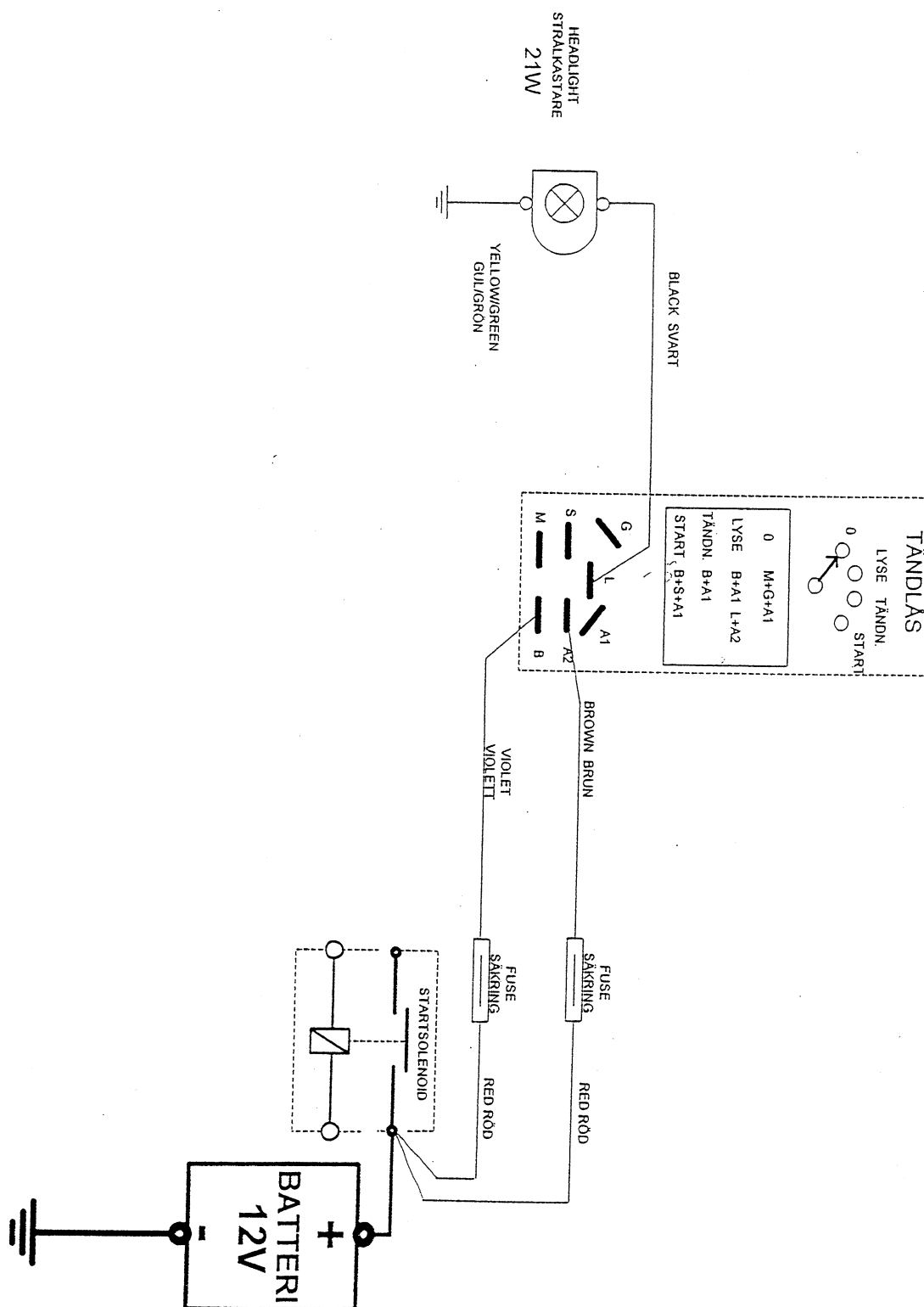




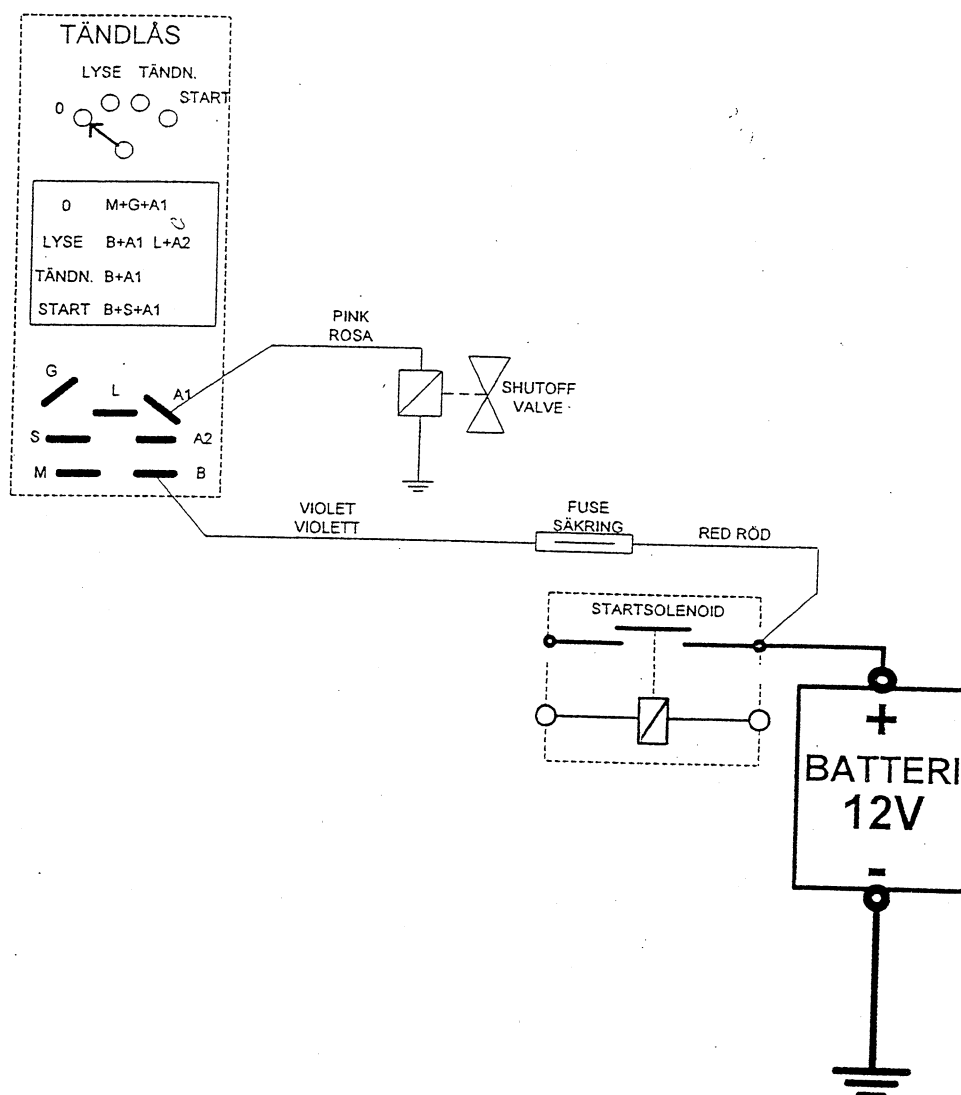
		Modell / Type		
00-02-14	Belysningskrets Headlight circuit	President, Royal		



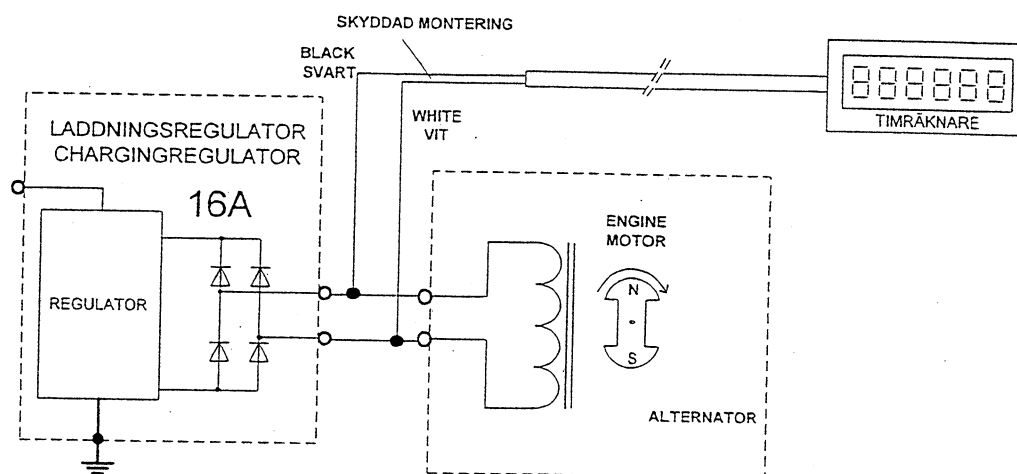
		Modell / Type		
00-02-14	Belysningskrets Headlight circuit	Pro 16, Pro 18, Pro 20		



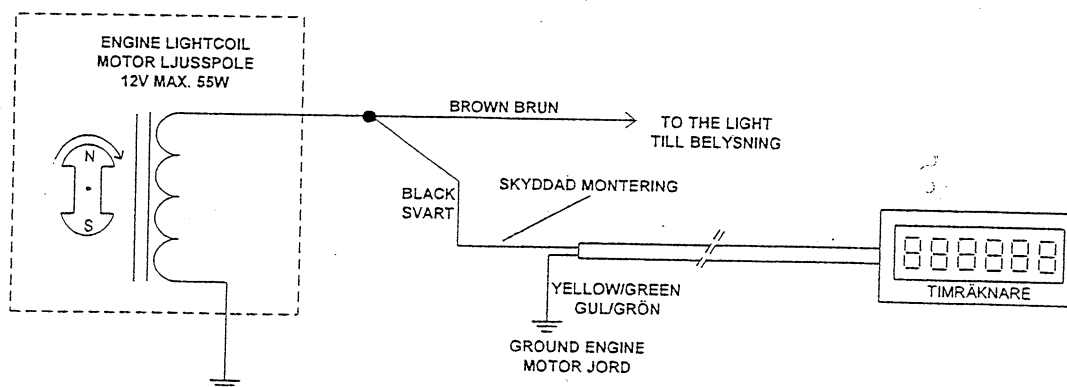
		Modell / Type		
00-02-14	Bränsleventil Shutoff valve	Royal, Pro 16, Pro 18, Pro 20		



		Modell / Type		
00-02-14	Timräknare Hour meter	President, Royal, Pro 16, Pro 18, Pro 20		

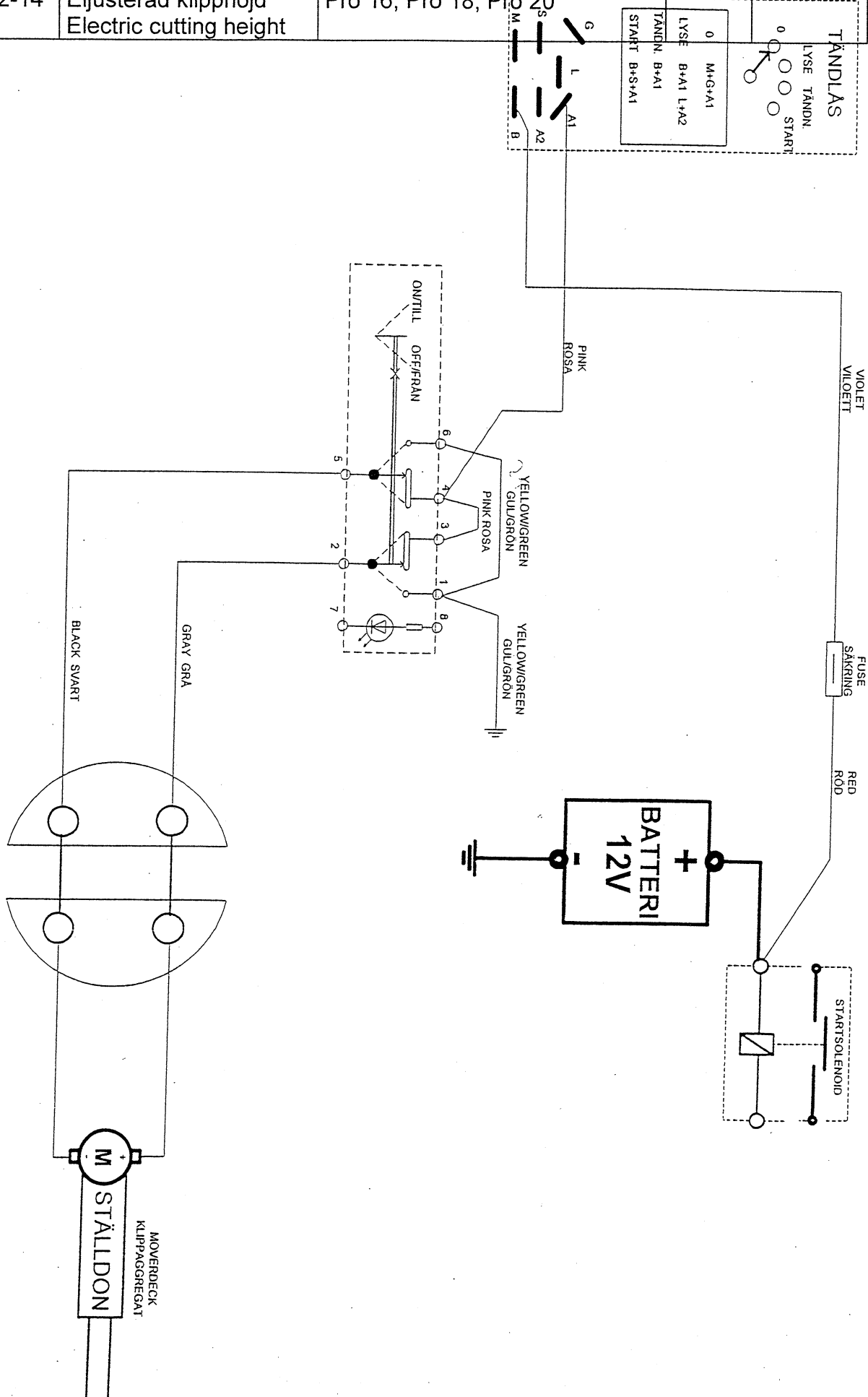


PRO 16
PRO 18
PRO 20

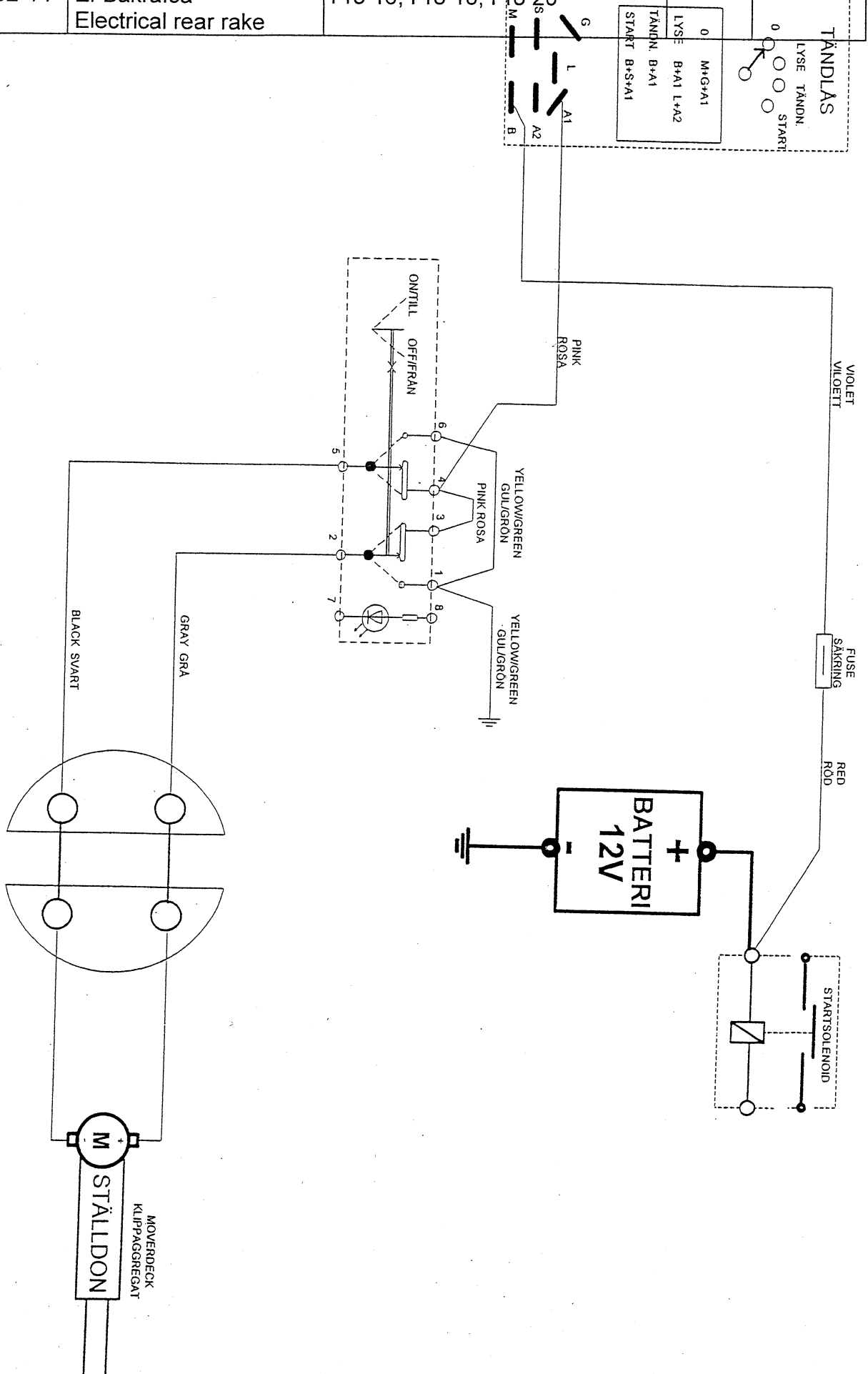


ROYAL
PRESIDENT

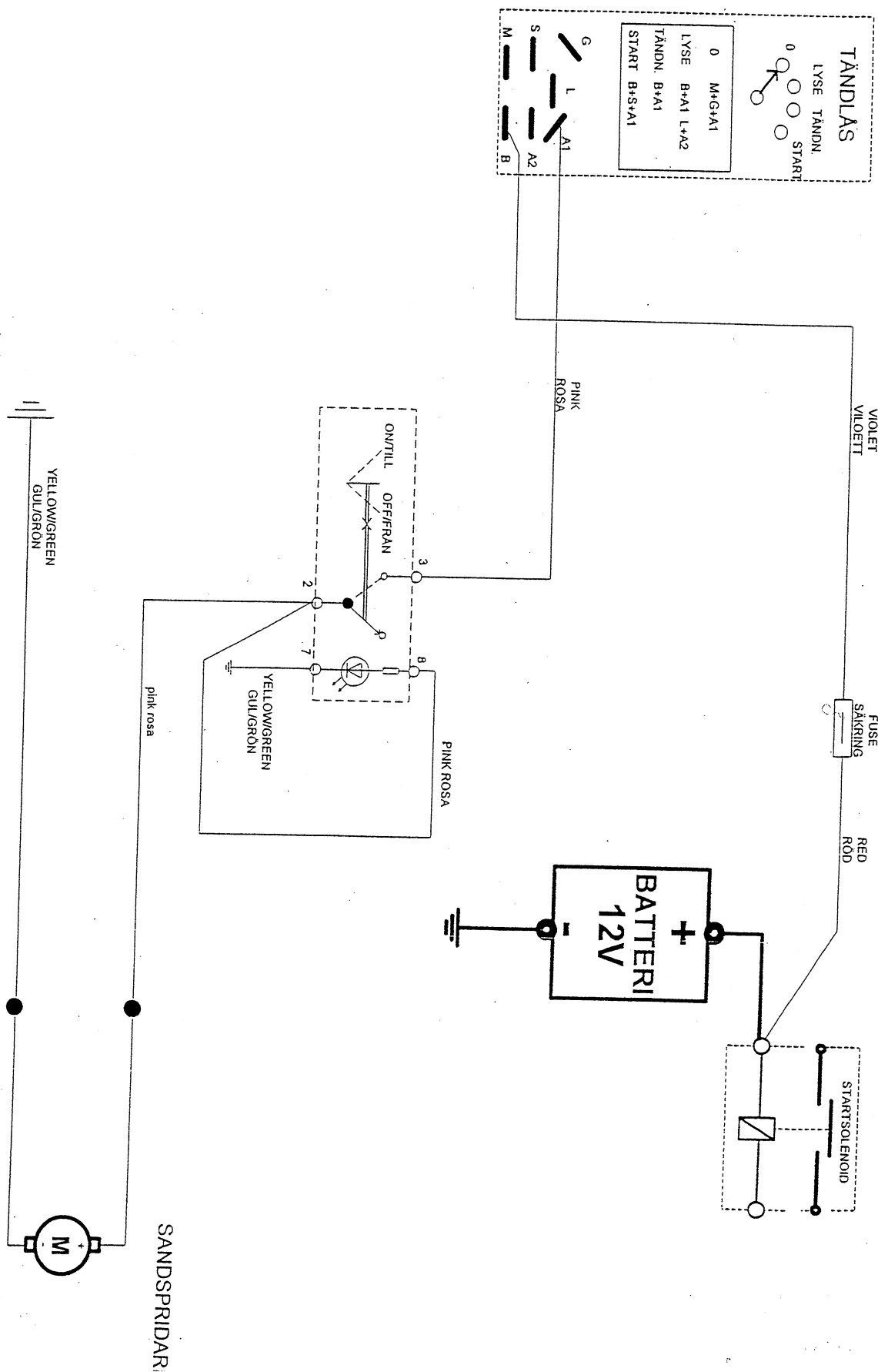
		Modell / Type	
00-02-14	Eljusterad klipphöjd Electric cutting height	Pro 16, Pro 18, Pro 20	



		Modell / Type	
00-02-14	El-Bakräfsa Electrical rear rake	Pro 16, Pro 18, Pro 20	



		Modell / Type		
00-02-14	Bakre eluttag Rear electrical outlet	Pro 16, Pro 18, Pro 20		



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Engine	All	1	2

2 Engine

All Stiga Park machines have engines manufactured by the well-known company Briggs & Stratton. This guarantees first-rate access to both spare parts and skilled service personnel. Stiga does not stock spare parts or workshop-manuals for the engines. Contact your authorised Briggs & Stratton dealer or general agent.

The service points described in the following section are the ones that should be conducted during 50 and 100 hours service.

However, extreme weather conditions or severe use may require servicing to be performed more often. This applies above all to changing the oil and cleaning the air filter.



Engine, Senator, President



Engine, Royal



Engine, Pro 16, Pro 18, Pro 20

CONTENTS

2.1	Fuel system	2
2.2	Oil change	3
2.3	Cleaning and changing airfilter, Senator and President.	4
2.4	Cleaning and changing airfilter, Royal	6
2.5	Cleaning and changing airfilter, Pro 16, Pro 18 and Pro 20.	8
2.6	Cleaning of air filter for catalytic converter.	10
2.7	Replacement of silencer / Assembly of catalytic converter	11
2.8	Cleaning of cooling fins, Senator and President	12
2.9	Cleaning of cooling fins, Royal	13
2.10	Cleaning of cooling fins, Pro 16, Pro 18 and Pro 20	14

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Fuel system	All	2	2.1

2.1 Fuel system

The engines in Senator and President are intended to be run with unleaded petrol with a minimum fuel grade of 77.

Royal, Pro 16, Pro 18, and Pro 20 are intended to be run with unleaded petrol with a minimum fuel grade of 85.

The engines will benefit from being run with environmentally adapted, Aliphatic petrol. This type of petrol has a composition that is less hazardous for both people and the environment.



Warning!

Fuel-oil mixture must not be used!



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change	All	3	2.2

2.2 Oil change



Warning!

Environmental information: Engine oil must always be treated as environmentally hazardous waste. Handle the oil in an environmentally correct manner!



Warning!

The engine and the oil can be very hot immediately after the engine is stopped. Observe caution to avoid burn injuries.

Senator, President and Royal

Run the engine warm and then drain off the oil.

Replace the oil plug.

Change the oil filter if the service schedule necessitates this. (Royal only).

Fill up with the recommended volume of oil. Replace the dipstick. Start the engine and run at idling speed for approx. 30 seconds. Switch off the engine and check the oil level. Top up if necessary.

Oil volume

Senator: 1.4 litres

President: 1.4 litres

Royal: 1.8 litres

Pro 16, Pro 18, Pro 20

Run the engine warm and then drain off the oil.

Replace the oil plug.

Change the oil filter if the service schedule necessitates this.

Pour in 1 litre of oil. Replace the dipstick. Start the engine and run at idling speed for approx. 30 seconds. Switch off the engine and check the oil level. Top up with oil to the correct level.

Oil volume

1.6 litres if the oil filter is changed at the same time.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning and changing the air filter	Senator and President	4	2.3

2.3-5 Cleaning and changing the air filter

2.3 Senator

If the machine is used in very dusty conditions the air filter should be cleaned more often.

The machine is provided with a paper filter and a pre-filter (foam plastic filter). The pre-filter can be washed several times, while the paper filter only withstands very limited cleaning.

Procedure

1. Loosen the wing nut that holds the cover over the air filter.
2. Loosen the wing nut that holds the filter element.
3. Carefully wipe the bottom plate to prevent dirt from dropping down into the carburettor.
4. Work off the pre-filter. Brush off loose impurities. Wash the pre-filter with detergent, kerosene or other similar non-inflammable liquid. Squeeze the pre-filter dry in a rag or piece of paper.
5. Check that the pre-filter is in good condition. Replaced if damaged.
6. Oil in the pre-filter with engine oil or special air filter oil.
7. Squeeze out surplus oil from the filter.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning and changing the air filter	Senator and President	5	2.3

**Warning!**

The paper filter must not be cleaned in any type of liquid, since this will damage the paper filter.

Do not use compressed air to clean the paper filter either. Compressed air will blow holes in the paper filter and cause it to loose its purifying capacity, completely or partially.

8. Carefully brush off loose impurities from the paper filter.
9. Tap the paper filter against a flat surface to shake off even more impurities.
If the paper filter is heavily fouled it must be replaced.
10. Work the pre-filter onto the paper filter and fit the filter element on the bottom plate.
Tighten the wing nut. Fit the protective cover and tighten the cover's wing nut.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning and changing the air filter	Royal	6	2.4

2.4 Royal

If the machine is used in very dusty conditions the air filter should be cleaned more often.

The machine is provided with a filter cassette and a pre-filter.

The pre-filter can be washed several times, while the filter cassette only withstands very limited cleaning.



Procedure

1. Loosen the wing nuts that hold the cover over the air filter.
Lift out the filter cassette and pre-filter.
2. Clean the pre-filter. Brush off loose impurities. Wash the pre-filter with detergent, kerosene or other similar non-inflammable liquid. Allow the filter to dry.
3. Check that the pre-filter is in good condition. Replace if damaged.
4. Oil the pre-filter with engine oil or special air filter oil.
5. Squeeze out surplus oil from the filter.



Warning!

The filter cassette must not be cleaned in any type of liquid, since this will damage it.

Do not use compressed air to clean the filter cassette either. Compressed air will blow holes in the filter cassette and cause it to lose its purifying capacity, completely or partially.

6. Carefully brush off loose impurities from the filter cassette.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning and changing the air filter	Royal	7	2.4

7. Tap the filter cassette against a flat surface to shake off even more impurities. If the filter cassette is heavily fouled it must be replaced.
8. Place the pre-filter in position first, with the net side facing up. Put in the filter cassette with the net side facing up. Check that the rubber moulding is in position round the entire filter. Put the cover in place and tighten the wing nuts.



Note!

Check that the cover fits securely round the hooks.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning and changing the air filter	Pro 16, Pro 18 and Pro 20	8	2.5

2.5 Pro 16, Pro 18, Pro 20

If the machine is used in very dusty conditions the air filter should be cleaned more often.

The machine is provided with a paper filter and a pre-filter.

The pre-filter can be washed several times, while the paper filter only withstands very limited cleaning.



Procedure

1. Loosen the wing nut that holds the petrol tank in place. Lift the tank.
2. Release the strap that holds the battery and lift the battery upwards and backwards so that it stands on the rear edge of the battery tray.
3. Release the clips on both sides of the filter housing and lift off the cover.
4. Remove the wing nut that holds the filter element in place and remove the filter.
5. Carefully work off the pre-filter. Brush off loose impurities. Wash the pre-filter with detergent, kerosene or other similar non-inflammable liquid. Squeeze the pre-filter dry in a rag or piece of paper.
6. Check that the pre-filter is in good condition. Replace if damaged.
7. Oil in the pre-filter with engine oil or special air filter oil.
8. Squeeze out surplus oil from the filter.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning and changing the air filter	Pro 16, Pro 18 and Pro 20	9	2.5

**Warning!**

The paper filter must not be cleaned with any type of liquid, since this will damage the filter.

Do not use compressed air to clean the paper filter either. Compressed air will blow holes in the paper filter and cause it to loose its purifying capacity, completely or partially.

9. Carefully brush off loose impurities from the paper filter.
10. Tap the paper filter against a smooth surface to shake off even more impurities. If the paper filter is heavily fouled it must be replaced.
11. Work on the pre-filter and fit the filter unit in the filter housing. Tighten the wing nut and fit the cover.

Note!

Check that the cover is securely in place.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning of air filter for the catalytic converter	Pro 18 and Pro 20	10	2.6

2.6 Cleaning air filter for catalytic converter

Pro 18, Pro 20

The air filter for supplementary air to the catalytic converter must be cleaned in accordance with the service schedule.

Procedure

1. Release the cover over the air filter by pressing in one of the hooks.



2. Brush off impurities and work off the foam plastic filter insert.
3. Wash the filter insert.

Note!

The filter must not be oiled.

4. Refit the filter insert and replace the cover.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of silencer / Assembly of cata-	All	11	2.7

2.7 Replacement of silencer / Assembly of catalytic converter

The bumper is provided with an inspection panel to simplify assembly and dismantling of the silencer and catalytic converter. Release the tank and remove the inspection panel to gain better access to the silencer and catalytic converter.

Catalytic converters are standard on Pro 18 and Pro 20.

Catalytic converters can also be fitted on Pro 16.

Note!

The complete exhaust system must be replaced when fitting catalytic converters on Pro 16 since the standard system lacks the supply of fresh air to the catalytic converter.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning of cooling fins	Senator and President	12	2.8

2.8-10 Cleaning of cooling fins

2.8 Senator and President

The cooling fins must be cleaned in accordance with the service schedule.

Procedure

1. Remove the four (4) screws that hold the protective cover over the engine. Remove also the small screw that holds the oil filler pipe.
2. Lift off the protective cover.



Warning!

Water must not be used for this cleaning process! Use a brush and compressed air.

Remove loose impurities. Use a soft brush and compressed air to clean the cooling fins.

Fit the protective cover and tighten the five (5) screws.

Follow-up work

Test driving.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning of cooling fins	Royal	13	2.9

2.9 Royal

The cooling fins must be cleaned in accordance with the service schedule.

Procedure

1. Remove the six (6) screws that hold the protective cover over the engine.
2. Lift off the protective cover.



Warning!

Water must not be used for this cleaning process! Use a brush and compressed air.



Warning!

Cover the opening on the inlet manifold with paper, tape or plastic, before starting to clean to avoid impurities getting into the carburettor.

3. Remove loose impurities. Use a soft brush and compressed air to clean the cooling fins.
4. Fit the protective cover and tighten the six (6) screws.

Follow-up work

Test driving.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Cleaning of cooling fins	Pro 16, Pro 18 and Pro 20	14	2.10

2.10 Pro 16, Pro 18, Pro 20

The cooling fins must be cleaned in accordance with the service schedule.

Procedure

1. Remove the screws that hold the fuel pump at the bracket.
Bend out the fuel pump so that the screws that hold the bracket can be removed.



2. Remove the other screws that hold the protective cover over the engine.
3. Lift off the protective cover.



Warning!

Water must not be used for this cleaning process! Use a brush and compressed air.

4. Remove loose impurities. Use a soft brush and compressed air to clean the cooling fins.
5. Fit the protective cover and tighten the screws.
6. Fit the fuel pump.

Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Chassis and body	All	1	3

3 Chassis and body



CONTENTS

3.1	Accessory lifter	2
3.1.1	Replacement of lifting lock and lifting fork Senator, President, Royal, Pro 16	3
3.1.2	Replacement of lifting lock and lifting fork, Pro 18	7
3.1.3	Replacement of lifting lock, Pro 20	11
3.1.4	Replacement of lifting fork, Pro 20	14
3.1.5	Repair of lifting lock.	16
3.1.6	Replacement of air spring for power assisted accessory lifter Pro 18, Pro 20 . . .	18
3.1.7	Repair of adjusting mechanism for assisted accessory lifter Pro 18, Pro 20	20
	Assembly of power assisted accessory lifter Senator, President, Royal, Pro 16 .	20
3.2	Seat suspension Senator and President.	22
3.3	Seat suspension Royal, Pro 16, Pro 18 and Pro 20	23
3.4	Lubrication, chassis	24

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Accessory lifter	All	2	3.1

3.1 Accessory lifter

The foot regulated accessory lifter enables simple handling of all accessories, even the heaviest. Pro 18 and Pro 20 are fitted with an air spring device to further simplify handling of the accessory lifter.

The air spring can be fitted as an accessory on all models.

The main component in the system is the lifting lock, which alternately stops in elevated position and alternately permits the lifter to be lowered.

The complete mechanism is built into the steering console.



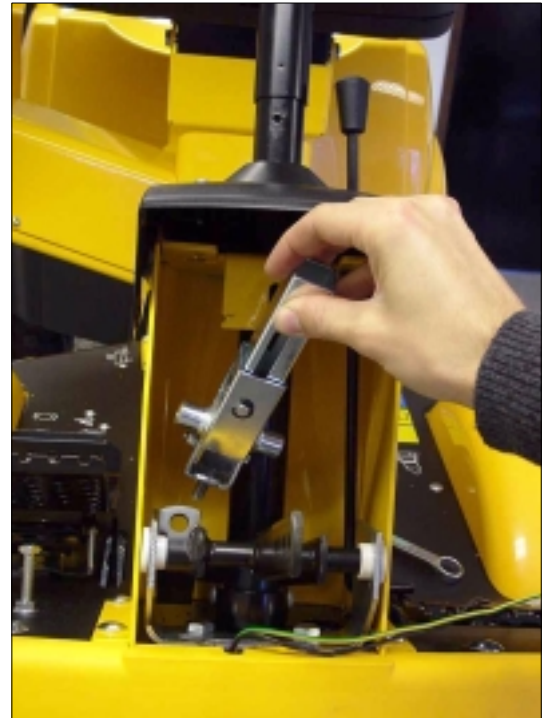
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock and lifting fork	Senator, President, Royal, Pro16	3	3.1.1

3.1.1-5 Lifting lock, lifting fork

3.1.1 Senator, President, Royal, Pro 16

Tip

To dismantle the lifting lock it is normally necessary to dismantle the steering console. Nevertheless, it is possible for a skilful person to dismantle the lifting lock without releasing the steering console.



Dismantling of lifting lock and lifting fork

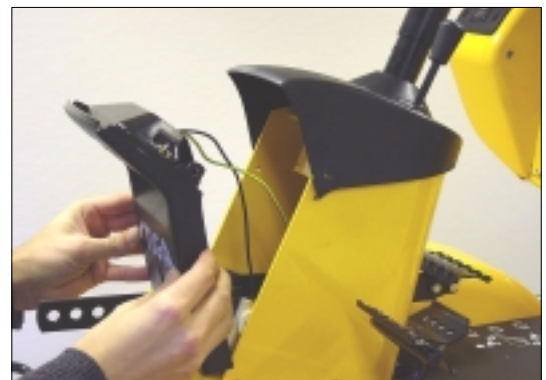
1. Dismantle the steering wheel by tapping out the pin.
2. Remove all the screws.



3. Dismantle the headlamp part of the front section.

Note!

It is not necessary to dismantle the top part of the front section.

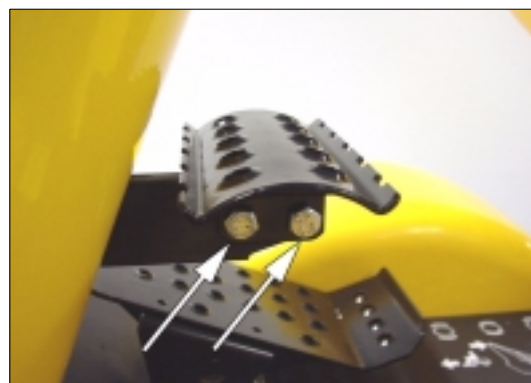


Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock and lifting fork	Senator, President, Royal, Pro16	4	3.1.1

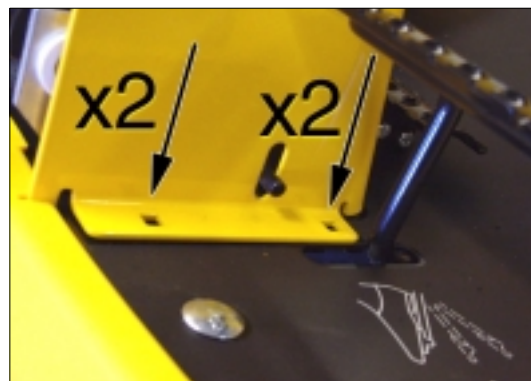
4. Unhook the return spring.



5. Dismantle the lifting pedal located on the lifting arm.

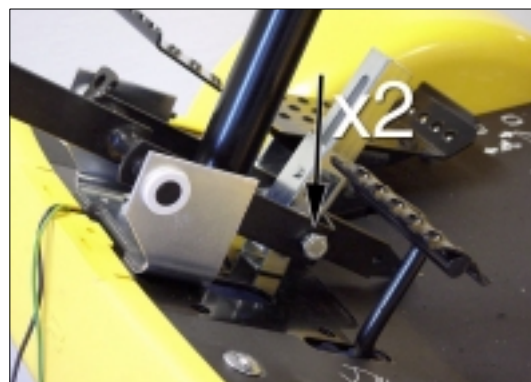


6. Remove the screws that hold the steering console at the floor plate, and lift off the steering console.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock and lifting fork	Senator, President, Royal, Pro16	5	3.1.1

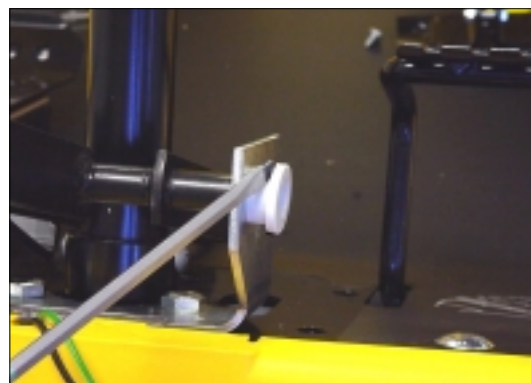
7. Remove the screws that hold the lifting fork at the lifting lock.



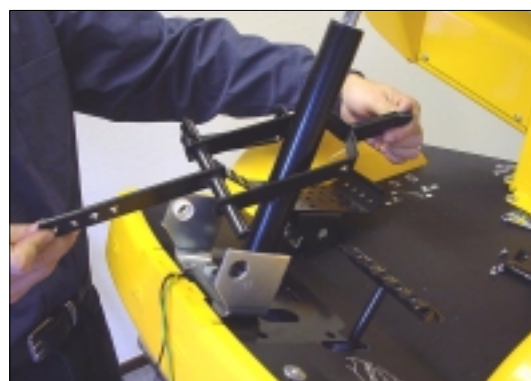
8. Remove the nut that holds the lifting lock on the underside of the floor plate, and remove the lifting lock.



9. Carefully dismantle the left bearing in the support with a screwdriver.



10. Remove the lifting fork from the support.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock and lifting fork	Senator, President, Royal, Pro16	6	3.1.1

Assembly of lifting lock and lifting fork

Assemble in reverse order.

Check that the accessory lifter functions as intended by repeatedly lifting and lowering it.

Note!

- It does not matter how the lifting lock is fitted since it is symmetrical.
- The spring for the parking brake is easiest to fit with a hook of steel wire.
- When fitting the steering wheel, make sure that the STIGA logotype is positioned correctly.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock and lifting fork	Pro 18	7	3.1.2

3.1.2 Pro 18



Warning!

The air spring pushes down the lifting fork with great force. To avoid personal injury it is extremely important to release the air spring before continuing.

Dismantling of lifting lock and lifting fork

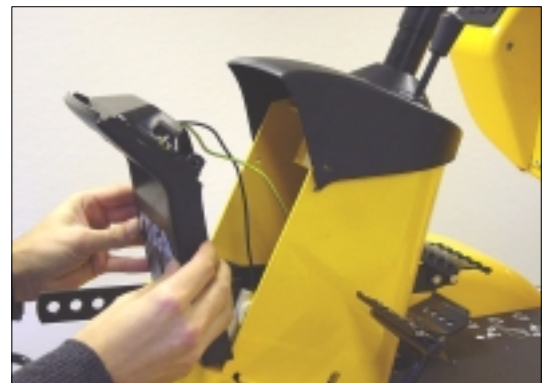
1. Dismantle the steering wheel by tapping out the pin.
2. Remove all the screws.



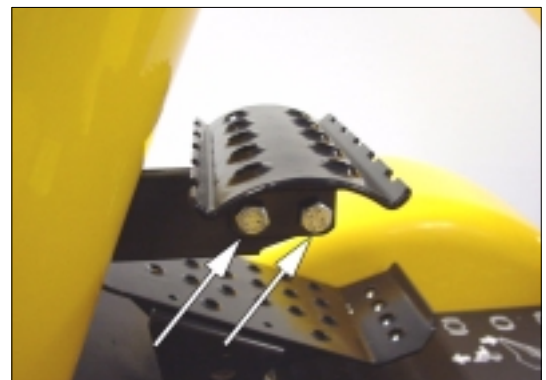
3. Dismantle the headlamp part of the front section.

Note!

It is not necessary to dismantle the top part of the front section.



4. Dismantle the lifting pedal located on the lifting arm.

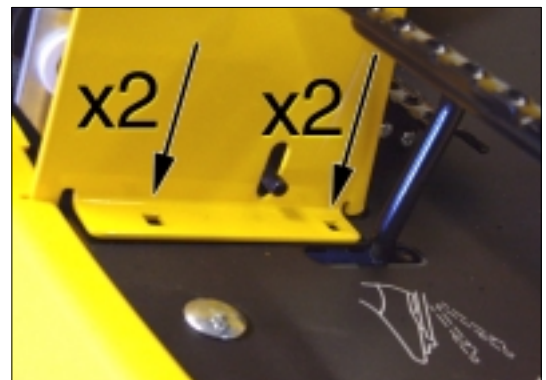
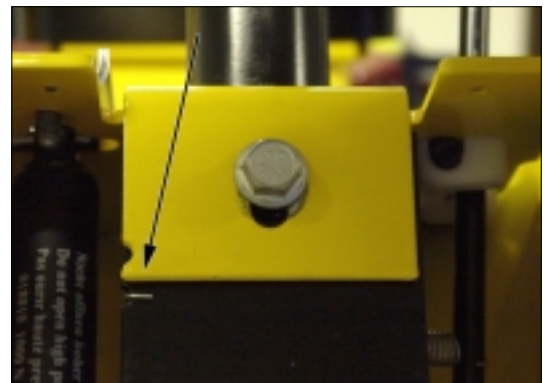
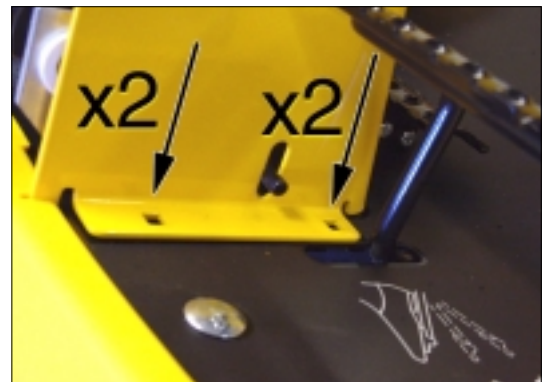


Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock and lifting fork	Pro 18	8	3.1.2

**Warning!**

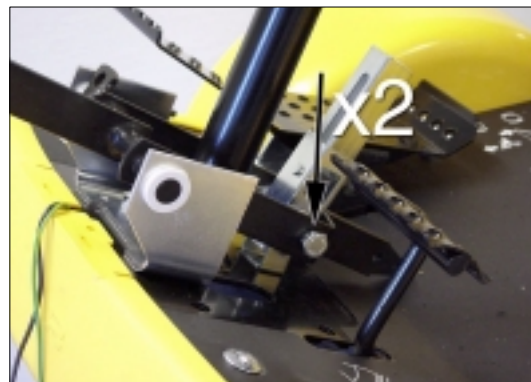
The air spring pushes down the lifting fork with great force. To avoid personal injury it is extremely important to release the air spring before continuing.

5. Release the air spring by turning the adjusting screw so that the air spring comes as far as possible into the steering console.
6. Remove the screws that hold the steering console at the floor plate.
7. Unhook the spring for the parking brake.
8. Remove the screws that hold the steering console at the floor plate, and lift off the steering console.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock and lifting fork	Pro 18	9	3.1.2

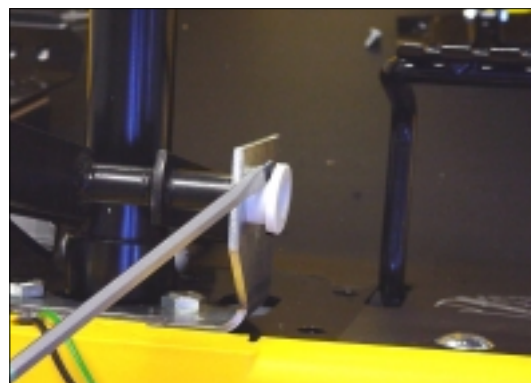
9. Remove the screws that hold the lifting fork at the lifting lock.



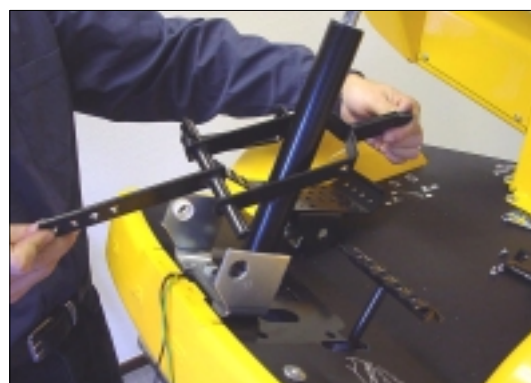
10. Remove the nut that holds the lifting lock on the underside of the floor plate and lift off the lifting lock.



11. Carefully dismantle the left bearing in the support with a screwdriver.



12. Remove the lifting fork from the support.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock and lifting fork	Pro 18	10	3.1.2

Assembly of lifting lock and lifting fork

Assemble in reverse order.

Check that the accessory lifter functions as intended by repeatedly lifting and lowering it.

Note!

- It does not matter how the lifting lock is fitted since it is symmetrical.
- The spring for the parking brake is easiest to fit with a hook of steel wire.
- When fitting the steering wheel, make sure that the STIGA logotype is positioned correctly.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock	Pro 20	11	3.1.3

3.1.3 Pro 20, lifting lock

**Warning!**

The air spring pushes down the lifting fork with great force. To avoid personal injury it is extremely important to release the air spring before continuing.

Dismantling of lifting lock

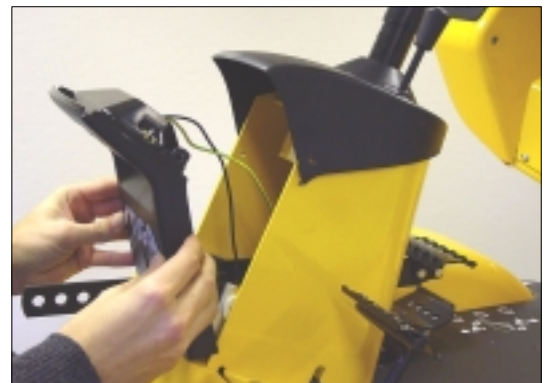
1. Dismantle the steering wheel by tapping out the pin.
2. Remove all the screws.



3. Dismantle the headlamp part of the front section.

Note!

It is not necessary to dismantle the top part of the front section.



4. Dismantle the lifting pedal located on the lifting fork.

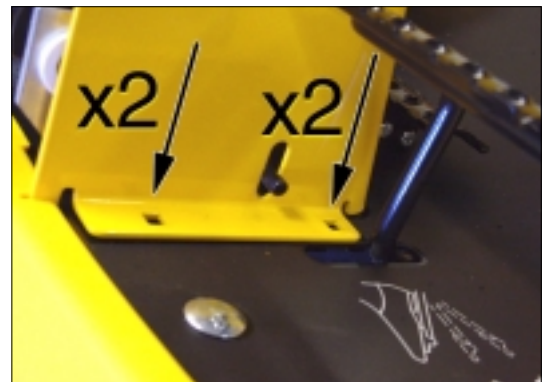


Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock	Pro 20	12	3.1.3

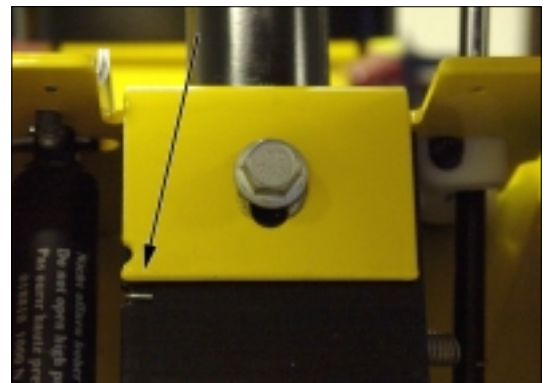
**Warning!**

The air spring pushes down the lifting fork with great force. To avoid personal injury it is extremely important to release the air spring before continuing.

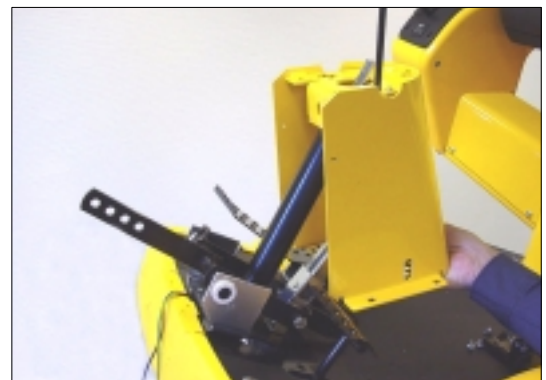
5. Release the air spring by turning the adjusting screw so that the air spring comes as far as possible into the steering console.
6. Remove the screw that fixes the torque converter at the steering console.
7. Remove the screws that hold the steering console at the floor plate.



8. Unhook the spring for the parking brake.

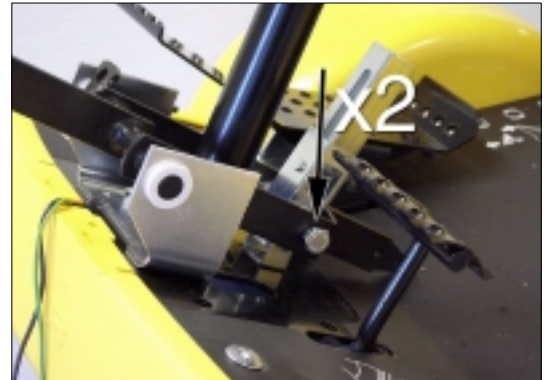


9. Dismantle the steering console.

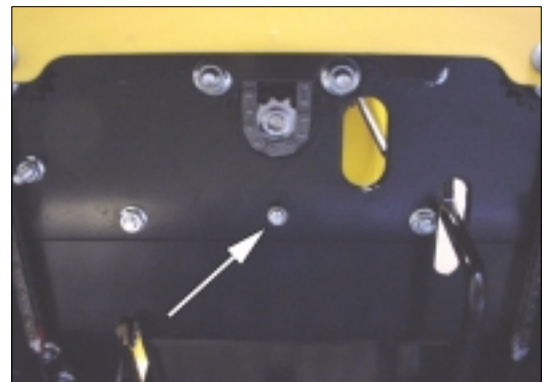


Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting lock	Pro 20	13	3.1.3

10. Remove the screws that hold the lifting fork at the lifting lock.



11. Remove the nut that holds the lifting lock on the underside of the floor plate, and remove the lifting lock.



Assembly of lifting lock

Assemble in reverse order.



Warning!

To avoid unnecessary wear, it is important, when fitting the screw that holds the torque converter at the steering console, to check that the three chain sprockets under the floor plate are at the same level at the same time.

Note!

- It does not matter how the lifting lock is fitted since it is symmetrical.
- The spring for the parking brake is easiest to fit with a hook of steel wire.
- When fitting the steering wheel, make sure that the STIGA logotype is positioned correctly.

Check that the lifting lock functions.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting fork	Pro 20	14	3.1.4

3.1.4 Pro 20, lifting fork

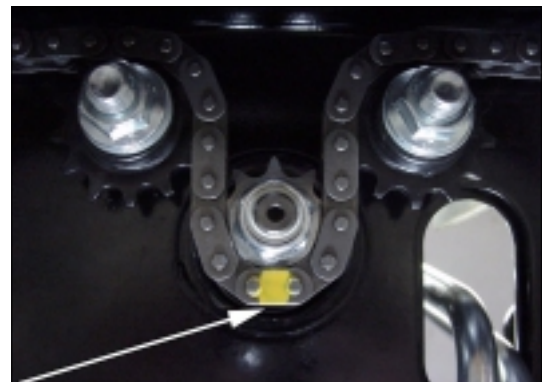
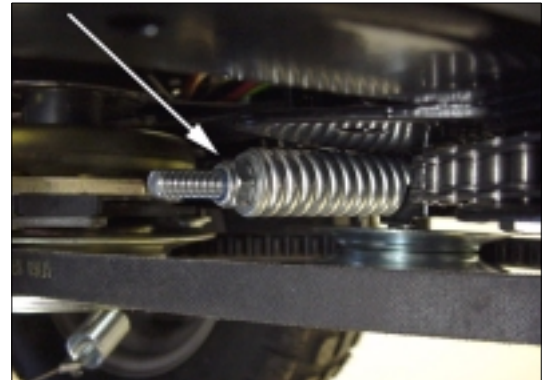
Dismantling of lifting fork

Preparations

Dismantling of lifting lock, Pro 20, see section 3.1.3.

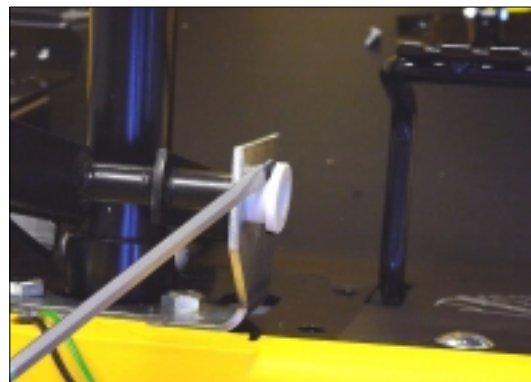
Procedure

1. Release the tension on the steering chain by removing the nut on the steering chain.
2. Before the chain is dismantled, mark the middle link to simplify the assembly work.
3. Unhook the chain at the front chain sprockets. It can be easier to get the chain off by slightly unscrewing the screws that hold the chain sprockets.
4. Remove the lock plate and pull the hydraulic pipes out from the torque converter, and then remove the torque converter.

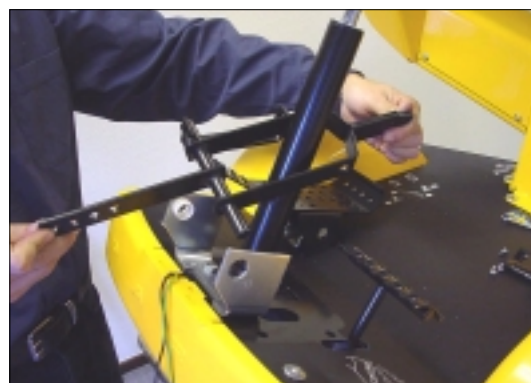


Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of lifting fork	Pro 20	15	3.1.4

5. Carefully dismantle the left bearing in the support with a screwdriver.



6. Remove the lifting fork from the bracket.



Assembly of lifting fork

Assemble in reverse order.

Check that the hole in the steering-column is fully inline with the length of the machine before the steering chain is put on. Use the mark made before dismantling to centre the chain more easily.

Follow-up work

- Dismantling of lifting lock, Pro 20, see chapter 3.1.3.
- Adjusting of steering chain, see chapter 4.2.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repair of lifting lock	All	16	3.1.5

3.1.5 Repair of lifting lock

The lifting lock can be purchased as a complete spare part.

The parts can be lubricated with a thin lubricant, e.g. silicon spray, 5-56, WD40, or the like, if the lock jams.

Note!

Viscous lubricant such as consistent grease must not be used.

Preparations

Senator, President, Royal and Pro 16:

Dismantling of lifting lock and lifting fork see section 3.1.1.

Pro 18:

Dismantling of lifting lock and lifting fork, Pro 18, see section 3.1.2.

Pro 20:

Dismantling of lifting lock Pro 20, see section 3.1.3.

Disassembly of lifting lock

- Retaining ring (8)
- Cotter (7)
- Star (6)

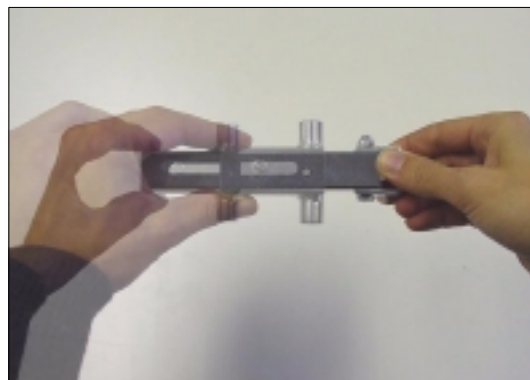
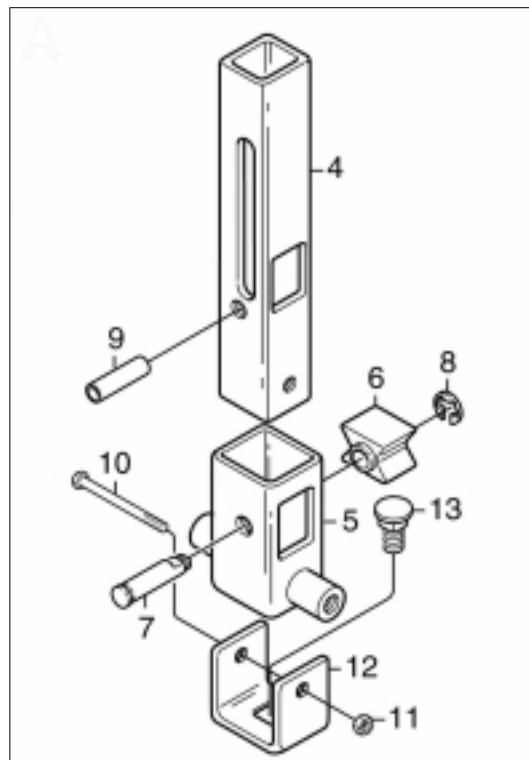
1. Separate the slide and runner (4 & 5).
2. Clean the parts and check if there is any damage.
3. Replace damaged parts.

Assembly of lifting lock

Fit the slide and runner (4 & 5). The square holes in the slide and runner must be fitted in the same direction.

- Star (6) and cotter (7)
- Retaining ring (8)

Check that the lifting lock functions by repeatedly moving it to its end positions. Check that there is no resistance, and that the lock functions.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repair of lifting lock	All	17	3.1.5

Follow-up work

Senator, President, Royal and Pro 16:

Assembly of lifting lock and lifting fork, see section 3.1.1.

Pro 18:

Assembly of lifting lock and lifting fork, Pro 18, see section 3.1.2.

For Pro 20:

Assembly of lifting lock, Pro 20, see section 3.1.3.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. of air spring for power assisted lifter.	Pro 18 and Pro 20	18	3.1.6

3.1.6 Replacement of air spring

Pro 18 and Pro 20

If the power assisted accessory lifter has lost its power, then the air spring probably needs replacing.



Warning!

The air spring pushes down the lifting fork with great force. To avoid personal injury it is extremely important to release the air spring before continuing.

1. Remove all the screws.

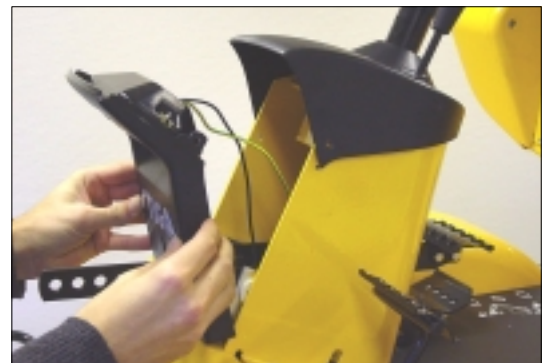


2. Dismantle the headlamp part of the front section.



Warning!

The air spring pushes down the lifting fork with great force. To avoid personal injury it is extremely important to release the air spring before continuing.



3. Release the air spring by turning the adjusting screw so that the air spring comes as far as possible into the steering console.



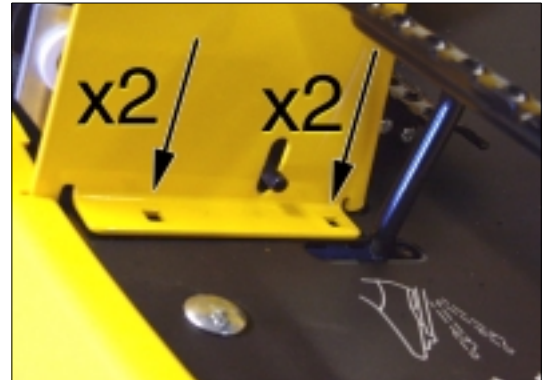
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. of air spring for power assisted lifter.	Pro 18 and Pro 20	19	3.1.6

4. Remove the screws that hold the steering console at the floor plate.
5. Lift the steering console slightly, angle forwards the air spring, and unscrew the air spring from the fork.

Note!

It is important that the piston rod is not damaged since this will reduce the service life of the air spring.

6. Fit the new air spring.
It is sufficient to tighten the air spring by hand.
7. Put the steering console in position and replace the screws.
8. Fit the front section.
9. Check that the accessory lifter functions.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repair, accessory lifter Assembly, accessory	Pro 18 and Pro 20, Senator, President, Royal and Pro 16	20	3.1.7

3.1.7 Repair, servo assisted lifter Pro 18, 20

3.1.7 Assembly servo lifter

The adjusting mechanism moves the air spring's lower attachment point.
All machines are prepared for assembly of the power assisted accessory lifter. A complete set for this modification is available from Stiga.



Preparations

Senator, President, Royal and Pro 16:

Dismantling of lifting lock and lifting fork
see section 3.1.1.

Pro 18:

Dismantling of lifting lock and lifting fork,
Pro 18, see section 3.1.2.

Pro 20:

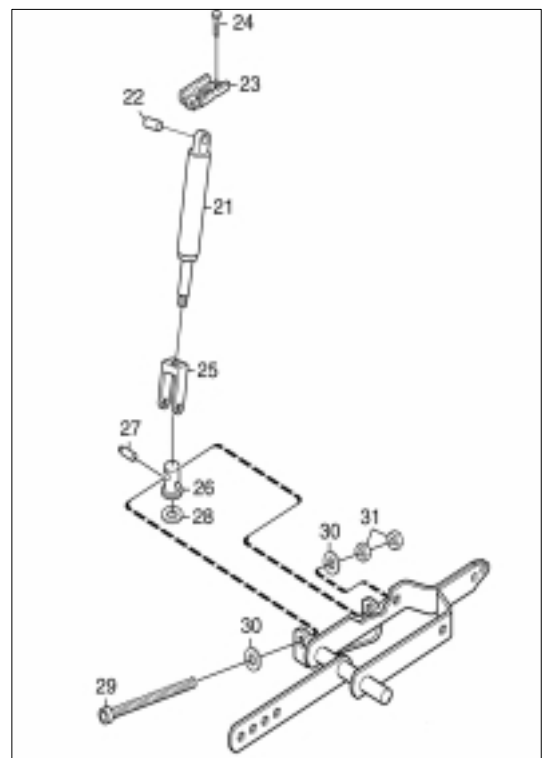
Dismantling of lifting fork, Pro 20,
see section 3.1.3.

Procedure

1. Remove the two low nuts. (pos. 31).
2. Unscrew the screw from the joint (pos. 26).
3. Clean the parts and check if there is any damage.
4. Lubricate moving parts before fitting.
5. Assemble the parts in reverse order.

The hole in the front section must be opened up with a drill, file, compass saw or the like, if the power assisted accessory lifter is fitted at a later date.

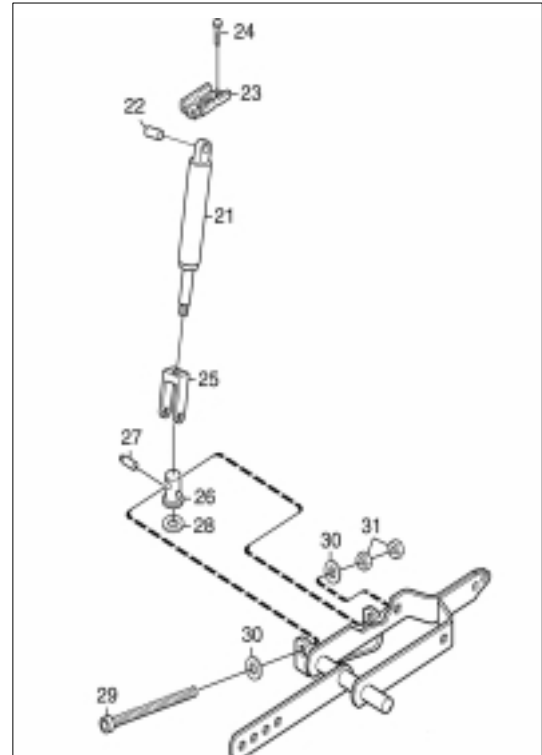
The plate (pos. 23) must also be fitted with the screws (pos. 24).



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repair, accessory lifter Assembly, accessory	Pro 18 and Pro 20, Senator, President, Royal and Pro 16	21	3.1.7

Note!

- The shaft must be mounted with the smallest diameter facing outwards (pos. 27).
- The bronze washer must always be fitted with the patterned surface facing the lifting fork (pos. 28).
- The washer under the screw head is coated with teflon and therefore it must not be replaced with a standard washer (pos. 30).
- The air spring must be completely released for the steering console to be mounted. Turn the adjusting screw so that the air spring comes as far as possible into the steering console.
- It may be necessary to loosen the screws (24) slightly to fit the four screws for the steering console.

**Follow-up work****Senator, President, Royal and Pro 16:**

Assembly of lifting lock and lifting fork, see section 3.1.1.

Pro 18:

Assembly of lifting lock and lifting fork, Pro 18, see section 3.1.2.

Pro 20:

Assembly of lifting fork, Pro 20, see section 3.1.3.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Seat suspension	Senator and President	22	3.2

3.2 Seat suspension

Senator, President

The machine is equipped with a simple seat suspension.

The folding seat can be adjusted lengthways. To avoid pinch injuries the seat is fitted with a catch.

Thanks to the simple design, the only maintenance the seat suspension needs is the lubrication of the hinges, when necessary.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Seat suspension	Royal, Pro 16, Pro 18 and Pro 20	23	3.3

Royal, Pro 16, 18, 20

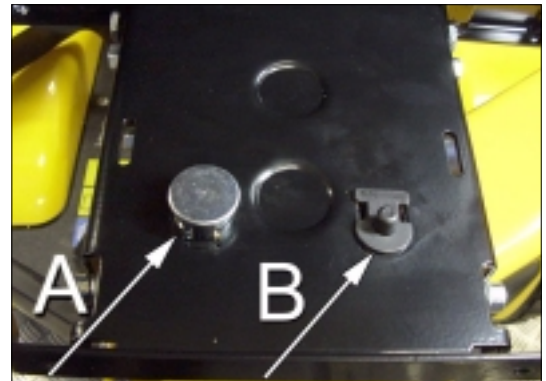
The machine is equipped with comfort suspension. The folding seat can also be adjusted lengthways. The suspension results in a parallel suspension motion.

The suspension does not normally require any maintenance, but a little grease or oil once or twice a year prevents wear.



The seat suspension operates in two stages. The first stage is a safety function, connected to the seat switch. When the seat is unloaded the pressure pin pushes **A** up the seat so that the switch **B** can spring out.

The pressure pin should be lubricated a few times per season to eliminate problems with the safety circuit.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Lubrication chassis	All	24	3.4

3.3 Lubrication chassis

The bearing for the articulation must be lubricated in accordance with the service schedule. Other moving parts are lubricated once per season, although at least every 50 operating hours.

Note!

- Lubrication is equally important for a machine that is only used for a few hours per year.
- The lubricant provides not only protection from wear but also from rust.
- The machine should always be lubricated before prolonged storage.

The bearing for the articulation has four grease nipples which must be lubricated with universal grease.

The steering chain must be lubricated with universal grease two or three times per season.

If the chains are heavily fouled: dismantle the chains and wash them, and then refit and lubricate them.

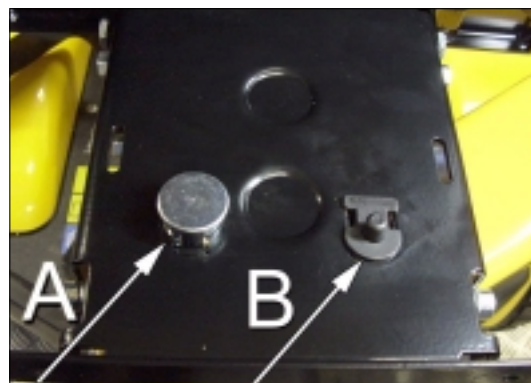
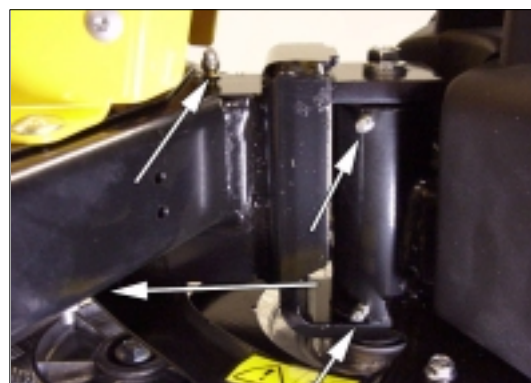
The pressure pin (A) in the seat suspension must be lubricated to avoid problems with the safety circuit.

Plastic bearings, e.g. the brake pedal bearing, hydrogear pedal bearing and steering-column bearing (Senator, President, and Royal only), must be lubricated with grease or lubricating spray.

Drop a little engine oil or lubricating spray in the ends of the control wires two or three times a year.

Note!

Wires on machines used in freezing conditions should not be lubricated with engine oil since this can lead to the control cables seizing in the cold. The wires on such machines should be lubricated with a fluent, strongly penetrating lubricant, e.g. 5-56 or WD40.





Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Steering	All	1	4

4 Steering

The genuine articulated steering on **Senator**, **President** and **Royal** is operated by a combination of chains and wires.

On **Pro 16** and **Pro 18** the steering is operated by chain only.

Pro 20 has the same type of steering chain as the other Pro machines, but the power assisted steering on Pro 20 makes it very easy to steer.

The system consists of a hydraulic auxiliary steering system. The main components are the torque amplifier, which is built into the steering console, an easily replaceable oil filter, and the oil pump in the hydrogear (K66).



CONTENTS

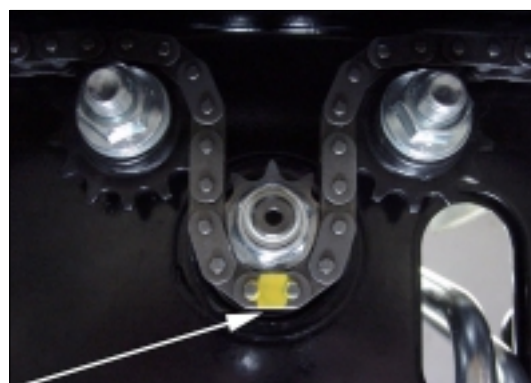
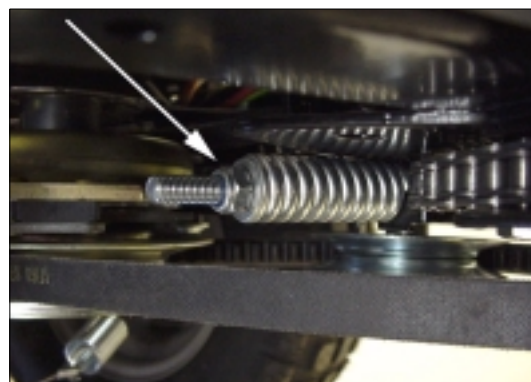
4.1	Replacement and adjustment of steering wires, Senator, President and Royal . . .	2
4.2	Replacement and adjustment of steering chain, Pro 16, Pro 18 and Pro 20.	4
4.3	Replacement of bearings in lower steering column tube, Senator, President and Royal	6
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4.5	Replacement of bearing in lower steering column tube, Pro 20	10
4.6	Power assisted steering, Pro 20	11

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl.and adjustment of steering wires	Senator, President and Royal	2	4.1

4.1-2 Replacement and adjustment of steering wires

4.1 Senator, President, Royal

1. Loosen the nuts on the steering wire. Brace with a spanner so that the wire does not rotate.
2. Loosen the screws that hold the pulley so that the wire can be taken out between the pulley and the wire retainer.
3. Unhook the chain at the front chain sprockets.
It can sometimes be easier to get the chain off by slightly unscrewing the screws that hold the chain sprockets.
4. Measure up the middle link on the new chain and mark it.
5. Place the chain on the chain sprockets. Make sure that the wheel is straight and that the marked middle link is placed on the middle of the chain sprocket.



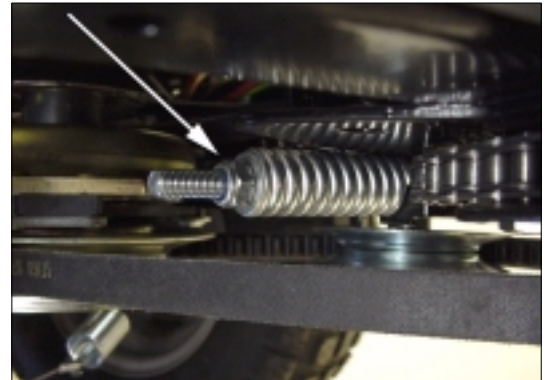
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. and adjustment of steering wires	Senator, President and Royal	3	4.1

6. Place the wire in the pulley and tighten the screws to the wire retainers.
7. Fit the washer and nut on the threaded rear ends of the steering wire.
Tension equally on both sides so that the wheel is straight when the machine is straight.
Brace with a spanner so that the wire does not twist.
8. Turn the wheels fully out in both directions. Check that the chain does not go into the pulley and that the wire does not go into the chain sprocket.
9. Test drive. Check the tension of the wire after test driving.

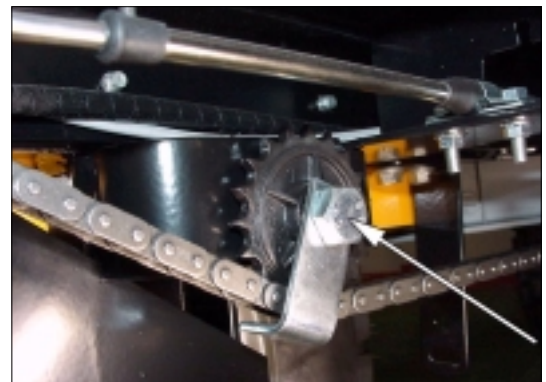
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. and adjustment of steering wire	Pro 16, Pro 18 and Pro 20	4	4.2

4.2 Pro 16, Pro 18, Pro 20

1. Loosen the nuts on the steering chain.



2. Loosen the screws that hold the chain sprockets so that the chain can be taken out between the chain sprocket and wire retainer.

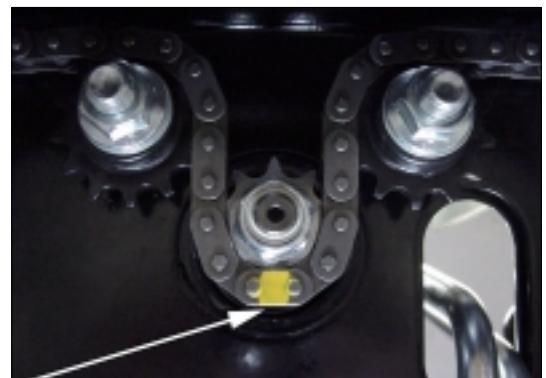


3. Unhook the chain at the front chain sprockets.
It can be easier to get the chain off by slightly unscrewing the screws that hold the chain sprockets.

4. Measure up the middle link on the new chain and mark it.



5. Place the chain on the chain sprockets.
Make sure that the wheel is straight and that the marked middle link is placed on the middle of the chain sprocket.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. and adjustment of steering wire	Pro 16, Pro 18 and Pro 20	5	4.2

6. Place the wire on the chain sprockets and tighten the screws to the wire retainers.
7. Fit the washer and nut on the threaded rear ends of the steering chain.
Tension equally on both sides so that the wheel is straight when the machine is straight.
8. Turn the wheels fully out in both directions. Check that there is no abnormal noise or abnormal resistance.
9. Test drive. Check the tension of the chain after test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl.of bearings in lower steering column tube	Senator, President and Royal	6	4.3

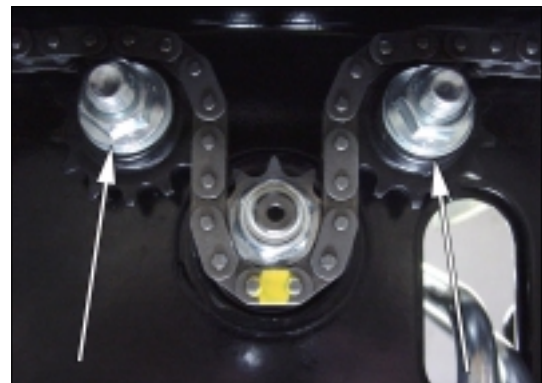
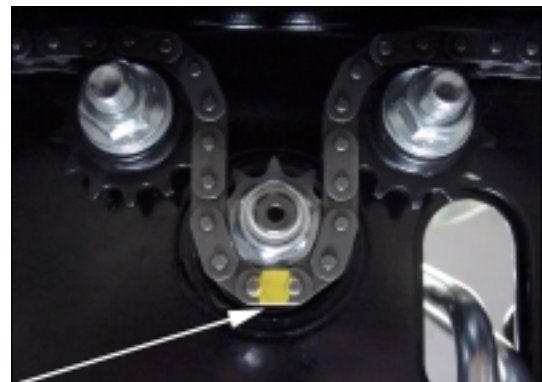
4.3-5 Replacement of bearings in lower steering column tube

4.3 Senator, President, Royal

The bearings in the steering column are sliding bearings of the composite type.

Procedure

1. Loosen the nuts on the steering wire.
Brace with a spanner so that the wire does not rotate.
2. Mark the middle link on the chain.
3. Unhook the chain at the front chain sprockets.
It can be easier to get the chain off by slightly unscrewing the screws that hold the chain sprockets.
4. Tap out the spring pin that holds the steering wheel. Remove the steering wheel.
5. Pull out the steering column downwards.
6. Tap out the bearing with a long drift, screwdriver or the like.
7. Tap in the new bearings with a rubber mallet.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. of bearings in lower steering column tu-	Senator, President and Royal	7	4.3

8. Grease the steering column and replace it.

Do not forget the spacers and washers.

9. Fit the steering wheel.

Note!

The correct number of shims must be used to avoid tensions in the steering column.

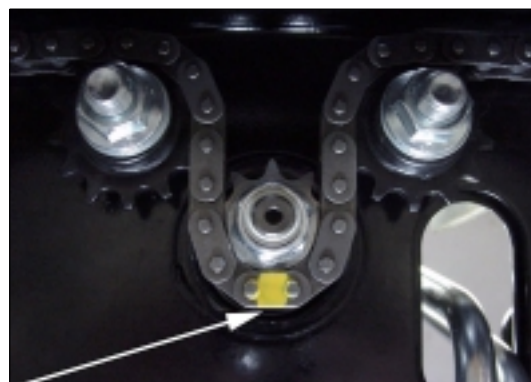
10. Place the chain on the chain sprockets. Make sure that the wheel is straight and that the marked middle link is positioned in the middle of the chain sprocket.

11. Insert the wire in the pulley and tighten the screws for the wire retainers.

12. Fit the washer and nut on the threaded rear ends of the steering wire. Tension equally on both sides so that the wheel is straight when the machine is straight. Brace with a spanner so that the wire does not twist.

13. Turn the wheels fully out in both directions. Check that the chain does not go into the pulley and that the wire does not go into the chain sprocket.

14. Test drive. Check the tension of the wire after test driving.



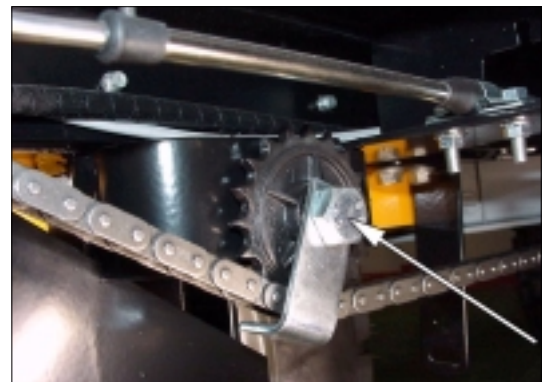
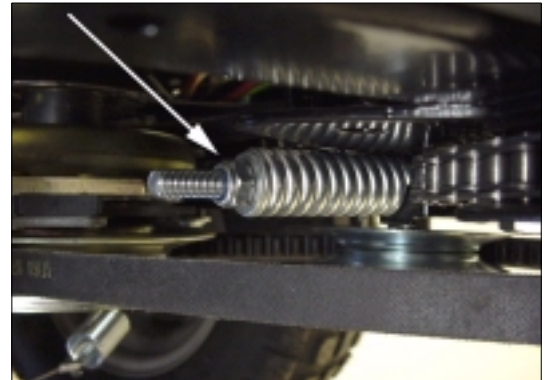
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. of bearings in lower steering column tu-	Pro 16 and Pro 18	8	4.4

4.4 Pro 16, Pro 18

The steering column bearings on Pro 16 and Pro 18 consist of two sealed ball bearings.

Procedure

1. Loosen the nuts on the steering chain.
2. Measure up the middle link on the new chain and mark it.
3. Loosen the screws that hold the chain sprockets so that the chain can be taken out between the chain sprocket and wire retainer.
4. Unhook the chain at the front chain sprockets.
It can sometimes be easier to get the chain off by slightly unscrewing the screws that hold the chain sprockets.
5. Tap out the spring pin that holds the steering wheel. Remove the steering wheel.
6. Pull out the steering column downwards.
7. Tap out the bearing with a long drift, screwdriver or the like.
8. Tap in the new bearings with a rubber mallet.
9. Grease the steering column and replace it.

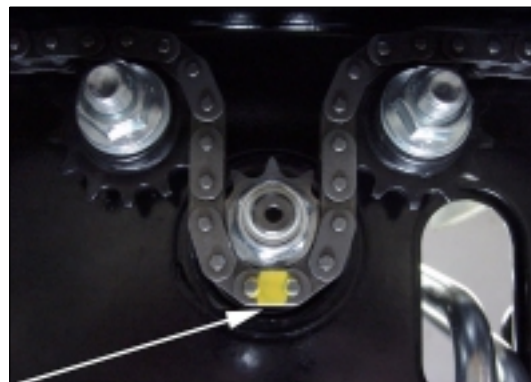


Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. of bearings in lower steering column tu-	Pro 16 and Pro 18	9	4.4

Note!

The correct number of shims must be used to avoid tensions in the steering column.

10. Fit the steering wheel. Make sure that the correct number of shims are used to avoid tensions in the steering column.
11. Place the chain on the chain sprockets. Make sure that the wheel is straight and that the marked middle link is positioned in the middle of the chain sprocket.
12. Place the chain on the chain sprockets and tighten the screws to the wire retainers.
13. Fit the washer and nut on the threaded rear ends of the steering chain. Tension equally on both sides so that the wheel is straight when the machine is straight.
14. Turn the wheels fully out in both directions. Check that there is no abnormal noise or abnormal resistance.
15. Test drive. Check the tension of the chain after test driving.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Repl. of bearings in lower steering column	Pro 20	10	4.5

4.5 Pro 20

The steering column on Pro 20 has only one ball bearing. The other bearing is built into the torque amplifier.

Preparations

Dismantling of lifting lock, see section 3.1.3.



Procedure

Remove the three screws that hold the lower steering column tube at the torque amplifier, and lift off the tube.

Tap out the old bearing and carefully press in the new.

Replace the steering column tube and tighten the three screws.

Follow-up work

Assembly of lifting lock, see section 3.1.3.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Power assisted steering	Pro 20	11	4.6

4.6 Power assisted steering, Pro 20

The power assisted steering on Pro 20 is a hydraulic auxiliary system. The main components are the torque converter, which is built into the steering console, an easily replaceable oil filter, and the oil pump in the hydrogear (K66).

As opposed to standard power steering (e.g. in a car), this power assisted steering has a limited capacity. This implies that in certain circumstances it has what may be experienced as negative characteristics. At low engine speed, or in situations where extra steering power is required, the steering may be considered to be somewhat jerky.

The machine should always be in motion when the steering is used. Avoid turning the steering wheel when the machine is standing completely still and the accessory is in lowered working position.

The machine can be steered even when the engine is switched off. Nevertheless, it may require more force than normal to steer the machine. This is particularly noticeable during cold weather.



Fault finding

One prerequisite for the function of the power assisted steering is the play in the steering. This play must always spring back to the starting position when the wheel is released.

Test by slowly turning the wheel in one direction when the engine is switched off. At first there is a slight resistance, which increases when the machine begins to turn. Release the wheel. It should now return to the middle position.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Power assisted steering	Pro 20	12	4.6

The wheel should spring back approx. 10-20 mm when the wheel is released after turning. However, the machine will not automatically “drive straight forward” after turning in the same way as a car.

If the machine always turns in the same direction as soon as the engine is started, there is probably a fault in the torque converter.

Another conceivable fault can be that the bearing in the steering column tube is jamming, so that the steering wheel cannot automatically return to the neutral position.

Note!

If the steering does not function this does not mean that there is always a fault in the torque converter. Faults can also occur in more simple mechanical parts such as chains and gear wheels.

Dismantling of torque converter

Preparations

Dismantling of lifting fork, Pro 20, see section 3.1.4.

Procedure

1. Remove the three socket head screws and remove the lower steering column tube from the dismantled torque converter.
2. Tap out the spring pin and remove the coupling and steering column.
3. Fit the coupling and steering column on the new torque converter.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Power assisted steering	Pro 20	13	4.6

**Warning!**

The spring pin must not extrude from the coupling. The machine can become impossible to steer if the tension pin extrudes!

4. Fit the lower steering column tube.

Follow-up work

Assembly of lifting fork, PRO 20, see section 3.1.4.

Repair of torque converter

The torque converter should always be replaced in its entirety. The complicated design often results in repairs being defective.

Note!

During the warranty period the torque converter must not be repaired, since this always leads to cancellation of the warranty undertakings.

**Warning!**

Always observe great care when assembling and testing a newly repaired torque converter.

If the torque converter is assembled incorrectly after being repaired this can result in malfunctioning. This can result in personal injury.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Controls and instruments	All	1	5

5 Controls and instruments

All the manoeuvring functions are incorporated on the control panel. This is an excellent solution in terms of ergonomics and comfort. It also simplifies the service work since all the controls and adjustments can be accessed in one place.



CONTENTS

5.1	Adjustment of gearshift wire	2
5.2	Replacement of gearshift wire	3
5.3	Adjustment of control wire HST	5
5.4	Replacement of control wire HST	7
5.5	Adjustment of brake Senator	10
5.6	Adjustment of clutch Senator	11
5.7	Replacement of brake or clutch wire Senator	12
5.8	Adjustment of brake / clutch, President, Royal, Pro 16, Pro 18 and Pro 20	13
5.9	Replacement of brake / clutch wire , President, Royal, Pro 16, Pro 18, Pro 20	15
5.10	Replacement of power take-off wire, Senator, President, Royal, Pro 16	16
5.11	Adjustment of differential lock wire, Pro 16, Pro 18 and Pro 20	17
5.12	Replacement of differential lock wire, Pro 16, Pro 18 and Pro 20	18

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of gearshift wire	Senator	2	5.1

5.1-2 Gearshift wire

5.1 Adjustment

Senator

Senator is equipped with one manual 5+1 geared gearbox. The gear positions are fixed in the gearbox, and therefore the adjustment of the position of the gearshift must be made by adjusting the length of the control wire.

The adjustment can be made both at the gearbox and from inside the control panel.

Procedure

1. Adjust the length of the control wire by moving the angle link on the control wire.
First release the nut that locks the angle link at the control wire, and then remove the loose wire.



2. Carefully dismantle the ball cups from the ball.
3. Move the ball cup part on the control wire by screwing on or off as necessary. If the ball cup part is moved so that the control wire becomes **longer** the gearshift will be moved **backwards**.



Note!

It is important that the angle link is not unscrewed too far on the control wire. The angle link must always be screwed on at least 5 mm to avoid damage to the threads.

4. Press the ball cups onto the ball and check that all the gear positions can be obtained.
5. Tighten the nut and replace the loose wire.

Note!

It is important that the loose wire goes through both holes in the ball cups, and that it is securely locked round the round part of the angle link.

Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of gears-hift wire	Senator	3	5.2

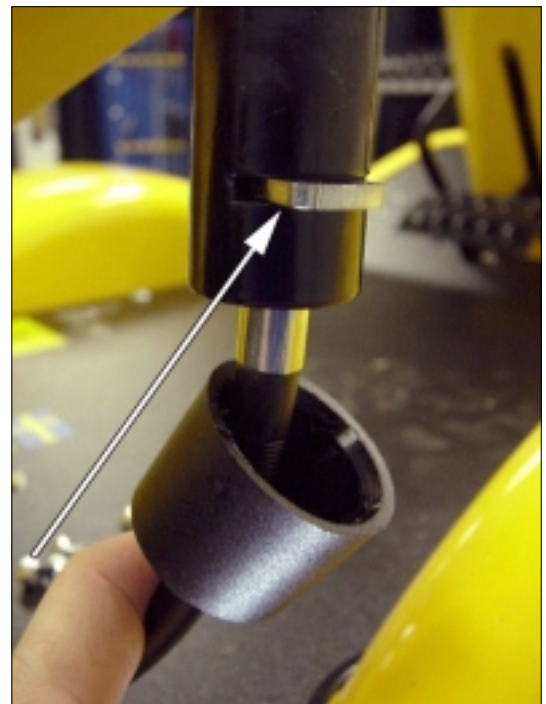
5.2 Replacement

Senator

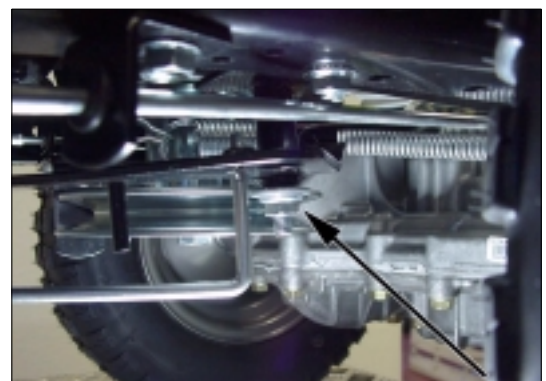
1. Dismantle the cover and back of the control panel.
2. Release the ball links in both the control and on the gearshift arm on the gear-box.



3. Work off the plastic top at the gearshift tube and pull out the locking clamp.



4. Remove the screw that holds the cap at the rear control wire attachment, and lift the control wire out of the slot. The screw that holds the cap is the same screw that the belt tensioner for the engagement of the deck is fixed with.
5. Dismantle the control wire.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of gears-hift wire	Senator	4	5.2

6. Do not forget to cut off the bundling strap that holds the cables and wires at the articulation point.
Notice how the control wire is routed, since it considerably simplifies fitting if the new wire is routed in the same way as the old one.
7. Move over the ball cups from the old wire to the new one.
8. Fit the new control wire.
9. Fit the wire in the rear attachment, and tighten the screw.
10. Check that the belt tensioner for the engagement of the deck functions correctly when the screw has been tightened, since the screw is also a link for the tensioning arm.
11. Thread the control wire in the gearshift tube and replace the locking clamp and plastic top.
12. Replace the ball links in both the control panel and on the gearshift arm on the gearbox.

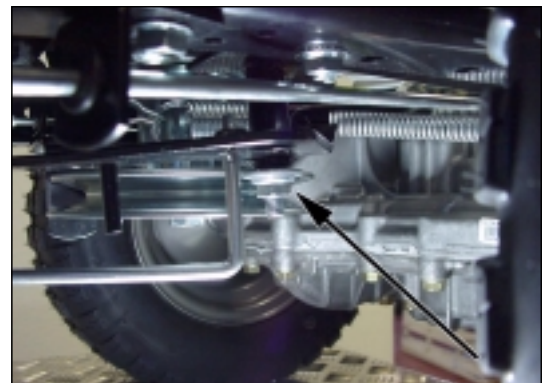
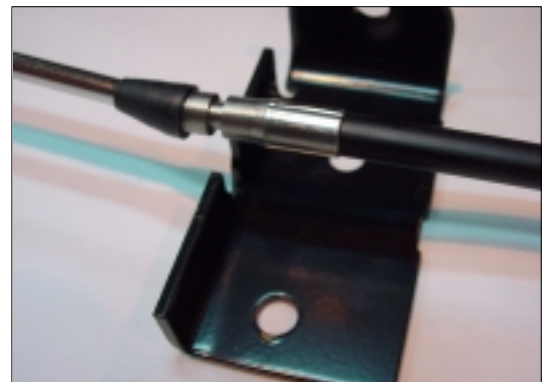
Note!

It is important that the loose wire goes through both holes in the ball cups, and that it is securely locked round the round part of the angle link.

13. Fit the cover and the back of the control panel.

Follow-up work

Adjustment of gear wire Senator, see section 5.1.



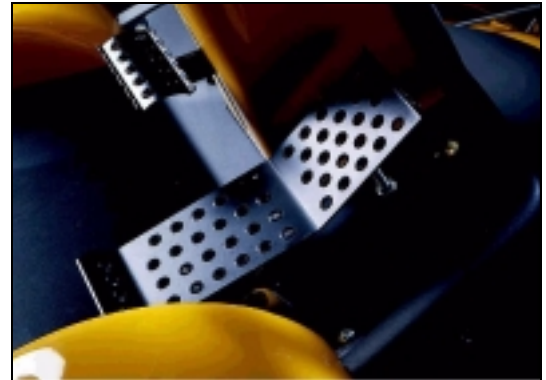
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of control wire	President, Royal, Pro 16, Pro 18 and Pro 20	5	5.3

5.3-4 HST control wire

5.3 Adjustment

President, Royal, Pro 16, Pro 18 and Pro 20

In theory this machine can go just as fast both forwards and backwards. It is therefore important that the basic position of the hydrogear pedal is correctly adjusted.



Procedure

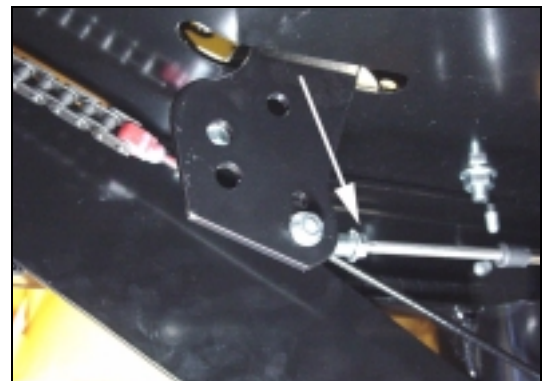
The pedal should in its rest position have a distance of 10-15 mm from the rear stop screw.

Note!

This distance can be adjusted to increase the reversing speed. However, the distance must never exceed 15 mm. The rear stop screw must always be screwed down as far as possible.



1. Adjust the distance by moving the angle links on the control wire.
First release the nut that locks the angle link at the control wire, and then remove the locking wire.



Release the ball cups from the ball.

Note!

It is important that the angle link is not unscrewed too far on the control wire. The angle link must always be screwed on the control wire **at least** 5 mm to avoid damage to the threads.



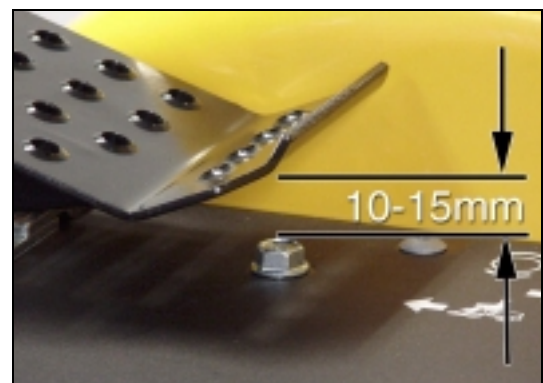
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of control wire	President, Royal, Pro 16, Pro 18 and Pro 20	6	5.3

2. Move the ball cup part on the control wire by screwing on or off as necessary. If the ball cup part is moved so that the control wire becomes **longer** the distance between the pedal and the rear stop screw will be **reduced**.

3. Press the ball cups on the ball and check the distance between the back of the pedal and the stop screw. The distance should be 10-15 mm. Tighten the stop nut and insert the locking wire.

Note!

It is important that the locking wire goes through both holes in the ball cups, and that it is securely locked round the round part of the angle link.



4. Release the upper nut on the stop screw and screw down the screw a few turns.

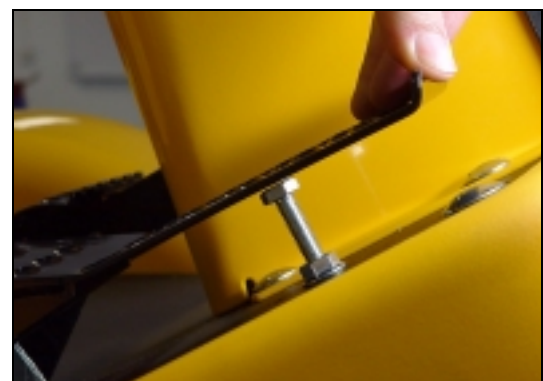


5. Press the pedal forwards as far as possible. Screw up the stop screw so that it touches the pedal.

6. Release the pedal and then screw up the stop screw a further ½ - 1 turn. Tighten the stop nut.

Note !

The movement of the pedal must always be limited by the stop screw, to avoid overloading the control wire.



Follow-up work:

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of control wire	President, Royal, Pro 16, Pro 18 and Pro 20	7	5.4

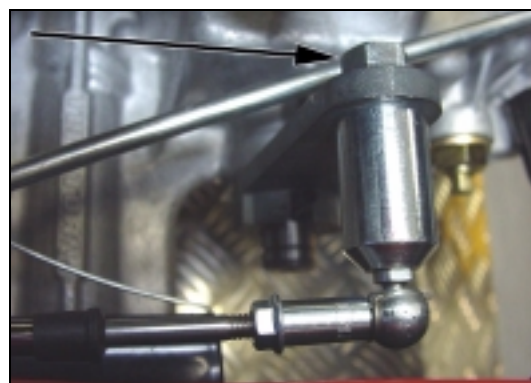
5.4 Replacement

President, Royal, Pro 16, Pro 18, Pro 20

1. Release the nut that locks the angle link at the control wire. Remove the locking wire from the ball joint. Release the ball cups from the ball.



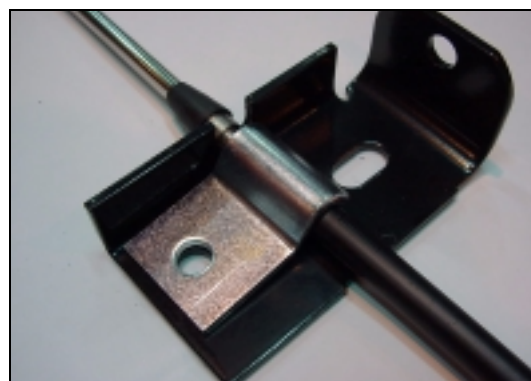
2. Remove the ball cup part and the nut from the control wire. The angle link should be removed both at the pedal and the hydrogear.



3. Remove the front clamp.

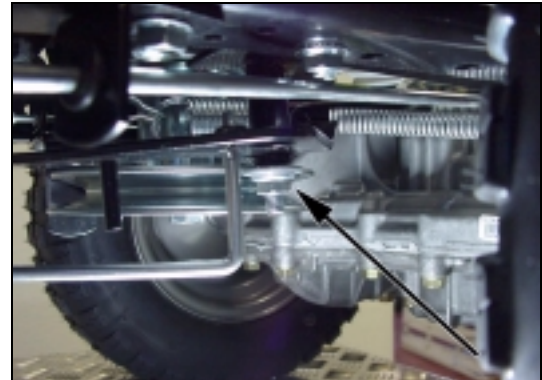


4. Remove the screw that holds the cap at the rear control wire attachment, and lift the control wire out of the slot.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of control wire	President, Royal, Pro 16, Pro 18 and Pro 20	8	5.4

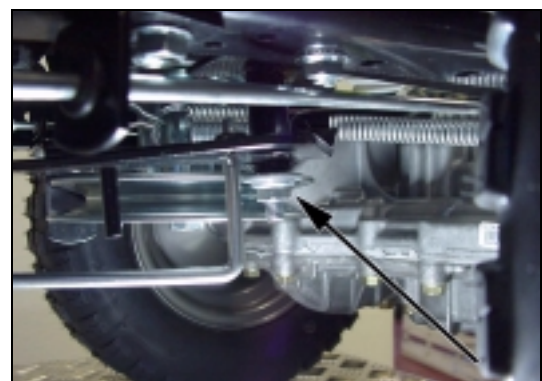
5. The screw that holds the cap is the same screw that the belt tensioner for the engagement of the deck is fixed with.
6. Dismantle the control wire.
It is easiest to pull out the control wire forwards. Do not forget to cut off the bundling strap that holds the cables and wires in the articulation point.
Notice how the control wire is routed, since it considerably simplifies fitting if the new wire is routed in the same way as the old one.
7. Fit the new control wire. Check that the wire is fitted in the right direction.
The arrow on the wire casing should always point forwards.



8. Fit the wire in the rear attachment, and tighten the screw.



9. Check that the belt tensioner for the engagement of the deck functions correctly when the screw has been tightened, since the screw is also a link for the tensioning arm.

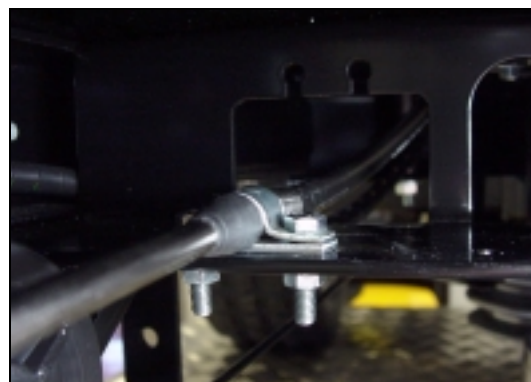


Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of control wire	President, Royal, Pro 16, Pro 18 and Pro 20	9	5.4

10. Fit the wire in the front attachment.

Check that the slot on the control wire coincides with the bulge in the cap. If these parts are fitted incorrectly it will be difficult to adjust the control wire since the wire will slide in the attachment.

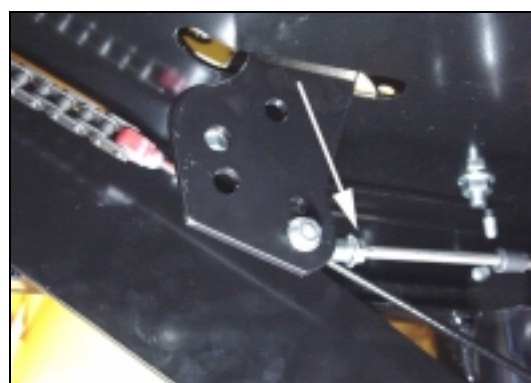
11. Thread the stop nuts on both ends of the control wire and fit the ball cups. Fit the ball cups on the balls.



12. Tighten the stop nut and insert the locking wire.

Note!

It is important that the locking wire goes through both holes in the ball cups, and that it is securely locked round the round part of the angle link.



Follow-up work

Adjustment of control wire, President, Royal, Pro 16, Pro 18, Pro 20, see section 5.3.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of brake	Senator	10	5.5

5.5-9 Brake / clutch

5.5-7 Senator

5.5 Adjustment of brake

The brake and clutch are two separate systems on Senator. However, the systems are operated by a joint pedal.



Warning!

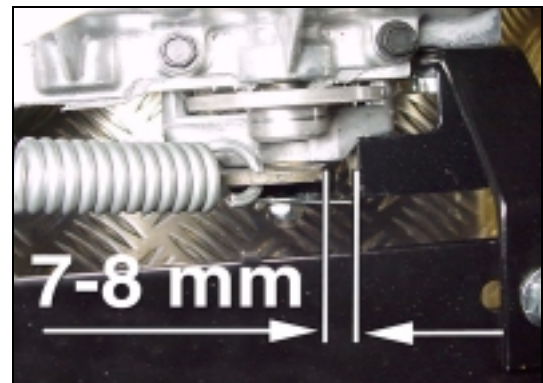
The clutch must always be activated before the brake comes into operation to avoid unnecessary wear and overloading of the brake.

Procedure

1. Check that there is a play of 10-15 mm in the combined brake/clutch pedal before the brake arm is actuated. Adjust if necessary by using the adjusting screws on the wire casing.
2. Activate the parking brake. Check that the spring that actuates the brake arm is tensioned somewhat.
3. When the parking brake is activated the distance between the brake arm's rear stop and the brake arm should be 7-8 mm.
In the illustration the brake arm's return spring has been dismantled to make the picture more explicit.
4. If the distance is not correct it is adjusted by turning the nut on the brake calliper. Release the parking brake and turn towards + to increase the distance, and towards – to reduce the distance.

Follow-up work

Test driving.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of clutch	Senator	11	5.6

5.6 Adjustment of clutch

The brake and clutch are two separate systems on Senator. However, the systems are operated by a joint pedal.

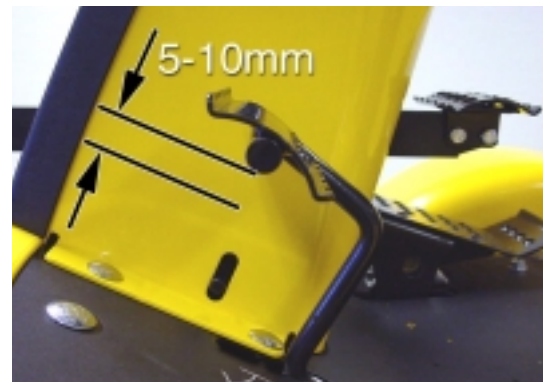


Warning!

The clutch must always be activated before the brake comes into operation, to avoid unnecessary wear and overloading of the brake.

Procedure

1. Check that there is a play of 5-10 mm in the combined clutch / brake pedal before the tensioning arm is actuated. Adjust if necessary by using the adjusting screws on the wire casing.



2. Check that the spring for the tensioning arm is still tensioned. If the spring is completely contracted then the belt is too long and must be replaced.

Note!

If the spring does not tension the belt properly the clutch will slip.

3. Activate the parking brake and check whether the belt tensioner disengages properly.



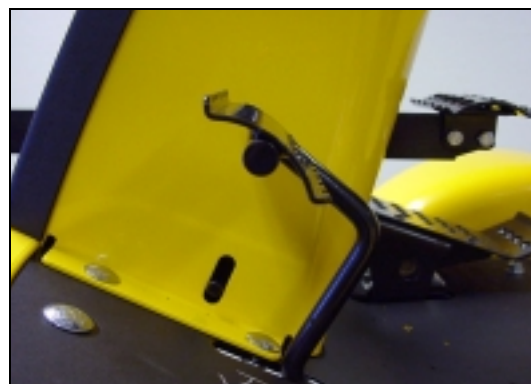
Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of brake or clutch wire	Senator	12	5.7

5.7 Replacement of wire

1. Release the wire at the attachment to the brake pedal.
2. Remove the adjusting nipples at the brake pedal.
3. Unhook the wire at the rear attachment point and remove the rear adjusting nipples.
4. Pull out the wire.
5. Do not forget to cut off the bundling strap that holds the cables and wires in the articulation point.
Notice how the wire is routed, since it considerably simplifies fitting if the new wire is routed in the same way as the old one.
6. Fit the adjusting nipples and hook on the wire.



Follow-up work

Adjustment of brake, see section 5.5.
Adjustment of clutch, see section 5.6.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of brake / clutch	President, Royal, Pro 16, Pro 18 and Pro 20	13	5.8

5.8-9 President, Royal, Pro 16, Pro 18, Pro 20

5.8 Adjustment of brake / clutch

The brake articulation consists of two parts. A front brake wire and a rear pull bar. The relative adjustment between these parts is very important for the satisfactory functioning of the brake and clutch. The governing principle is that the drive belt should always be disengaged before the brake comes into operation.



Warning!

It is extremely important that these parts are correctly adjusted. Incorrect adjustment leads to increased wear. The machine can also be difficult to manoeuvre.

Procedure

1. Release the stop nuts at the ends of the wire.
2. The clutch pedal should have a clearance of 10-15 mm. Adjust if necessary.
3. Activate the parking brake.
The length of the brake arm spring should be 35 mm when the parking brake is activated. Adjust if necessary by turning the nut.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of brake / clutch	President, Royal, Pro 16, Pro 18 and Pro 20	14	5.8

4. Test drive.

A comprehensive test drive is required to check the function of the brake and transmission.

A. Test the disengaging function by driving slowly forwards and simultaneously pressing down the brake pedal half way. The machine should slowly stop as the drive belt is disengaged.

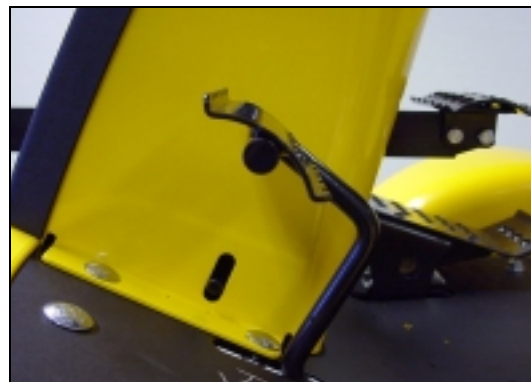
B. Release the clutch and the machine should start to move forwards again. Now press the brake fully down, more quickly than the former test. The machine should now stop immediately.

C. Now park the machine on a slope and activate the parking brake. Switch off the engine. Check that the machine does not move. If the machine moves, adjust the parking brake as above.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of brake / clutch wire	President, Royal, Pro 16, Pro 18 and Pro 20	15	5.9

5.9 Replacement of brake / clutch wire

1. Release the nuts at the wire's rear and front attachments, and dismantle the wire from the supports. Unhook the Z nipples.
2. Dismantle the wire.
Pay careful attention to how the wire is routed. It simplifies fitting if the new wire is routed the same way.
3. Fit the wire.
Make sure that the new wire is not bent unnecessarily since this will shorten its service life.
4. Hook the Z nipple in the brake arm and fit the adjusting screw in the support.
5. Hook the Z nipple in the tensioning arm and fit the adjusting screw in the support.



Follow-up work

Adjustment of brake / clutch, President, Royal, Pro 16, Pro 18, Pro 20, see section 5.8.

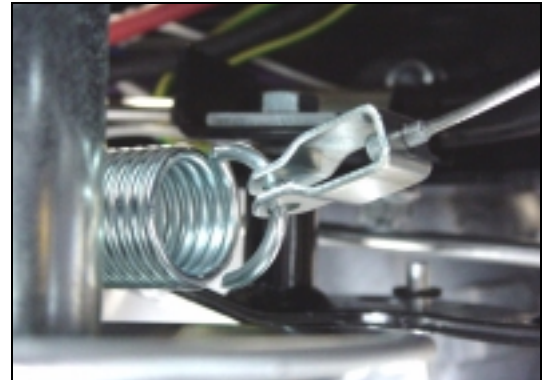
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of PTO engagement wire	Senator, President, Royal and Pro 16.	16	5.10

5.10 Replacement of PTO engagement wire

5.10 Senator, President, Royal and Pro 16

Dismantling of PTO engagement wire

1. Remove the cover over the control panel.
2. Release the wire from the tension spring at the belt tensioner.
3. Release the nuts at the wire's lower attachment point, and dismantle the wire from the support.
4. Release the nuts at the wire's upper attachment point, unhook the Z nipple from the control arm, and remove the wire from the machine.
Do not forget to cut off the bundling strap that holds the cables and wires in the articulation point.
Notice how the wire is routed, since it simplifies fitting if the new wire is routed in the same way as the old one.



Assembly of PTO engagement wire

Assemble in the reverse order.

It is often easier to fit the wire from underneath, since the Z nipple is easier to guide correctly through the seat bracket than the spring attachment in the bottom end of the wire.

Follow-up work

Adjustment of power take-off brake, see section 7.4.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of differential lock wire	Pro 16, Pro 18 and Pro 20	17	5.11

5.11-12 Differential lock wire

5.11 Adjustment

The differential lock is a real lock that locks the two output shafts to improve accessibility in difficult conditions.

The design of the differential lock may make it necessary to turn somewhat for the lock to be disengaged. This is completely normal.

The lock can be used all the time if so required, without the risk of malfunction. However, the machine is more difficult to steer when the differential lock is engaged. The ground can also be damaged when turning with the differential lock engaged. Stiga therefore recommends only using the lock when justified in terms of accessibility.

Procedure

1. Check that there is a play of 5-10 mm in the engagement lever for the differential lock.
Adjust if necessary.

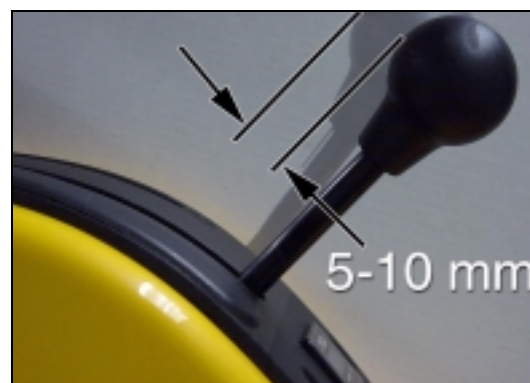
Note!

The internal wire is normally used to engage the functions. However, the wire casing is used for the differential lock.

2. Adjust the play by using the adjusting screws on the wire. The play can also be adjusted inside the control panel if the trimming allowance is not sufficient.

Follow-up work

Test driving.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of differential lock wire	Pro 16, Pro 18 and Pro 20	18	5.12

5.12 Replacement

Dismantling of differential lock wire

1. Remove the cover over the control panel.
2. Release the nuts at the wire's upper attachment point, unhook the Z nipple from the control arm, and remove the wire from the machine.
3. Release the wire from the tension spring at the arm on the hydrogear.
4. Release the nuts at the wire's lower attachment point, and dismantle the wire from the lever.
5. Do not forget to cut off the bundling strap that holds the cables and wires in the articulation point.
Notice how the wire is routed, since it simplifies fitting if the new wire is routed in the same way as the old one.



Assembly of differential lock wire

Assemble in the reverse order.

It is often easier to fit the wire from underneath, since the Z nipple is easier to guide correctly through the seat bracket than the spring attachment in the bottom end of the wire.

Follow-up work

Adjustment of differential lock wire,
See section 5.11.

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2000-04-06	Electrical system	All	1	6

6 Electrical system

The electrical system has a similar structure on all the machines. However, there are certain differences depending on which type of engine the machine is equipped with.

Senator is only fitted with one system for the charging of the machine's battery, while **President** and **Royal** both have two parallel electrical systems. One for charging the machine's battery, and one for the headlight.

Pro 16, **Pro 18** and **Pro 20** are all equipped with an electronic voltage and charging regulator. The electrical system supplies 12-13 volts direct current (DC) even at low rpm. All machines in the Pro series are prepared for installation of electrically powered accessories. All Pro machines are prepared for electric height adjusting of the mower deck. This requires special cutting decks.



CONTENTS

6	Description of the electrical system	2
6.1	Safety circuit, Senator and President	4
6.2	Safety circuit, Royal and Pro 16	5
6.3	Safety circuit, Pro 18 and Pro 20	7

Edition	Chapter	Refers to model	Page	Chapter
2000-04-06	Electrical system	All	2	6

6 Description of electrical system

The electrical system has a similar structure on all the machines. However, there are certain differences depending on which type of engine the machine is equipped with.

Senator

Senator is only equipped with one system for charging the machine's battery.

President and Royal

President and Royal both have two parallel electrical systems. One for charging the machine's battery, and one for the lighting.

The battery charging system is only intended to supply enough current to charge the battery and to power auxiliary circuits for the safety system and cruise control. The connection of extra equipment on this system can lead to a flat battery, so that the machine cannot be started.

The lighting system is intended to power one or more bulbs with a maximum output of 55 W at a voltage of 8-14 volts, depending on the speed. The lighting system only functions when the engine is running.

Note!

The lighting system supplies alternating current (AC), and therefore it is not possible to connect equipment intended for direct current to this system.

Pro 16, Pro 18 and Pro 20

Pro 16, Pro 18 and Pro 20 are all equipped with an electronic voltage and charging regulator. The electrical system supplies 12-13 volts direct current (DC) even at low speed. The maximum power output is 16A (approx. 190W) when the engine is running at maximum speed. The main headlamp on these machines is powered by the

Edition	Chapter	Refers to model	Page	Chapter
2000-04-06	Electrical system	All	3	6

battery. The lighting can also be used when the engine is not running.

Any extra electrical equipment connected to the electrical system should not have an output exceeding 110W (9.2A). The system can be loaded with a higher output for short periods, but with a prolonged power output the battery can be discharged.

All machines in the Pro series are prepared for installation of electrically powered accessories.

All Pro machines have equipment to handle powered height adjusting of the mower deck.

Pro 16 and Pro 18 have cables for a rear power outlet (sand spreader) and rear accessory lifter, installed at the factory. Pro 16 and Pro 18 only need to be supplemented with switches and power outlets if these accessories are to be used. The requisite installation parts are supplied together with the accessories.

Pro 20 has all the electrical equipment installed as standard.

Fuses

The machines are equipped with 2 to 4 fuses depending on the model. The fuses are always numbered starting from the top fuse.

Note!

The fuses do not have the same rated current on all the machines.



Edition	Chapter	Refers to model	Page	Chapter
2000-04-06	Safety circuit	Senator and President	4	6.1

6.1-3 Safety circuits

6.1 Senator, President

For the safety of the user, the electrical system consists of a number of different component groups. For detailed information on the electrical system, see the section Electrical system (chapter 6) and the Wiring diagram (section 1.6).

Starting circuit

To start the engine, the power take-off must be disconnected and the brake pedal depressed. On Senator, the gearshift must also be in neutral.

The seat switch has no function in the starting circuit.

The starting circuit consists, in addition to the battery of the starter and starter relay, the power take-off switch, seat switch, brake pedal switch, fuse No. 1, and the gearshift switch (Senator only).

Safety circuit

For safety reasons the engine will stop if the driver leaves the seat when the power take-off is engaged. Senator stops both if the power take-off is engaged or if a gear is engaged when the driver leaves the seat.

The safety circuit consists of the power take-off switch, seat switch, brake pedal switch, and gearshift switch (Senator only).

Edition	Chapter	Refers to model	Page	Chapter
2000-04-06	Safety circuit	Royal and Pro 16	5	6.2

6.2 Royal, Pro 16

For the safety of the user the electrical system consists of a number of different component groups. For detailed information on the electrical system, see the section Electrical system (chapter 6) and the Wiring diagram (section 1.6).

Starting circuit

For the machine to be started, the driver must be sitting on the seat, the brake pedal must be depressed, and the power-take off must be disengaged.

The starting circuit consists in addition to the battery of the starter relay and starter, the seat switch, power take-off, brake pedal switch, power take-off switch, starter key, fuse No. 1 and one relay.

Cruise control circuit

The machine is equipped with a cruise control for comfortable driving on long shifts. The cruise control consists of an electromagnet, which holds the forward drive pedal in a fixed position decided by the driver. The cruise control is disconnected manually by the driver by simply pressing a button, or if the driver leaves the seat or activates the brake.

The cruise control consists of an electromagnet, seat switch, brake pedal switch, cruise control switch, fuse No. 1 and one relay.

Edition	Chapter	Refers to model	Page	Chapter
2000-04-06	Safety circuit	Royal and Pro 16	6	6.2

Safety circuit

So that the machine will stop if the driver falls off the machine or leaves the seat for some other reason without first disconnecting the cruise control or power take-off, there is a safety circuit consisting of the seat switch, brake pedal switch, power take-off switch, fuse No. 1 and one relay. The engine will stop if the driver leaves the seat when the power take-off is engaged. If the driver leaves the seat when the cruise control is engaged the cruise control will be disengaged and the machine will therefore stop. If both the power take-off and cruise control are engaged the engine will stop and the cruise control will be disengaged.

Miscellaneous

To further improve safety these machines are equipped with a Shut-Off valve, which stops the fuel supply to the engine when the ignition is switched off. This valve is mounted on the carburettor bowl to the carburettor. The system consists, in addition to the valve, of the ignition lock and fuse No. 4.

Edition	Chapter	Refers to model	Page	Chapter
2000-04-06	Safety circuit	Pro 18 and Pro 20	7	6.3

6.3 Pro 18, Pro 20

For the safety of the user the electrical system consists of a number of different component groups. For detailed information on the electrical system, see the section Electrical system (chapter 6) and the Wiring diagram (section 1.6).

Starting circuit

For the machine to be started the driver must be sitting on the seat, the brake pedal must be depressed, and the power-take off must be disengaged.

The starting circuit consists, in addition to the battery, of the starter relay and starter, the seat switch, power take-off switch, brake pedal switch, starter key, fuse No. 1 and one relay.

Cruise control circuit

The machine is equipped with a cruise control for comfortable driving on long shifts. The cruise control consists of an electromagnet, which holds the forward drive pedal in a fixed position decided by the driver. The cruise control is disengaged manually by the driver by simply pressing a button, or if the driver leaves the seat or activates the brake.

The cruise control consists of an electromagnet, seat switch, brake pedal switch, cruise control switch, fuse No. 1 and one relay.

Edition	Chapter	Refers to model	Page	Chapter
2000-04-06	Safety circuit	Pro 18 and Pro 20	8	6.3

Safety circuit

So that the machine will stop if the driver falls off the machine or leaves the seat when the cruise control and/or power take-off is engaged, there is a safety circuit consisting of the seat switch, brake pedal switch, fuse No. 1 and one relay. If the driver leaves the seat when the power take-off is engaged the power take-off will be disengaged. If the driver leaves the seat when the cruise control is engaged the cruise control will be disengaged and the machine will therefore stop. If both the power take-off and cruise control are engaged both the power take-off and the cruise control will be disengaged.

Miscellaneous

To further improve safety these machines are equipped with a Shut-Off valve, which stops the fuel supply to the engine when the ignition is switched off. This valve is mounted on the carburettor bowl to the carburettor. The system consists, in addition to the valve, of the ignition lock and fuse No. 1.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Power take-off	All	1	7

7 Power take-off

Senator, President, Royal, Pro 16

The machine is equipped with a manual engaging system for the power take-off. This system operates by tensioning the belt between the engine and the articulation point at the same time as the power take-off brake is disengaged. The maximum tension of the belt is regulated by means of a spring on the wire that actuates the belt tensioner.

The power take-off brake consists of a brake pad made of a composite material, which is pressed against the articulation belt pulley by means of a rod from the belt tensioner.

Pro 18, Pro 20

The machine is equipped with an electrical system to engage the power take-off. On the engine shaft there is a magneto coupling (MagStop coupling) which is operated with a switch on the control panel. This coupling also functions as a power take-off brake.



CONTENTS

7.1	Replacement of belt, engine - articulation point Senator, President, Royal, Pro 16	2
7.2	Replacement of belt, engine - articulation point, Pro 18 and Pro 20	3
7.3	Replacement of belt, articulation point - deck	4
7.4	Adjustment of PTO brake, Senator, Royal and Pro 16	5
7.5	Replacement of belt pulley/belt tensioner mounted in articulation point	7

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt, engine - articulation	Senator, President, Royal and Pro 16	2	7.1

7.1-2 Replacement of belt, engine - articulation point

7.1 Senator, President, Royal, Pro 16

Dismantling of belt, engine - articulation point

Preparations

Dismantling of belt, articulation point - deck, see section 7.3.

Procedure

1. Remove the nut that holds the nipple at the brake arm.

2. Dismantle the tension pulley.

3. Work off the belt.

It is not necessary to dismantle the belt guides if they are carefully pressed out slightly by hand when the belt is dismantled or fitted.

Assembly of belt, engine - articulation point

Assemble in reverse order.

Follow-up work

Adjustment of PTO brake, see section 7.4.

Assembly of belt, articulation point - deck, see section 7.3.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt, engine - articulation	Pro 18 and Pro 20	3	7.2

7.2 Pro 18, Pro 20

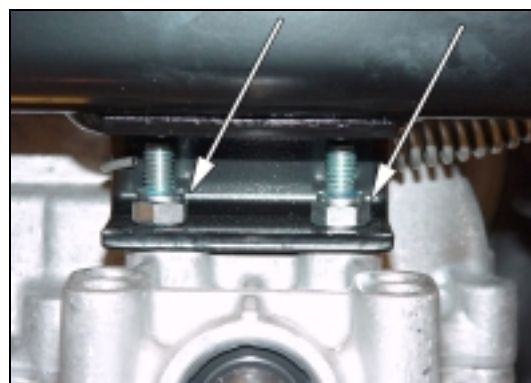
Dismantling of belt, engine - articulation point

Preparations

Dismantling of belt, articulation point - deck, see section 7.3.

Procedure

1. Block up the rear frame and remove the right rear wheel.
2. Release the screws that hold the hydro-gear at the frame.
The screws do not need to be removed, just unscrewed a few turns.
3. Remove the tension pulley on the belt, engine - articulation point.
4. Work off the belt.



Assembly of belt, engine - articulation point

Assemble in the reverse order.

Follow-up work

Assembly of belt, articulation point - deck, see section 7.3.

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt articulation point - deck	All	4	7.3

7.3 Replacement of belt, articulation point - deck

Dismantling of belt, articulation point - deck

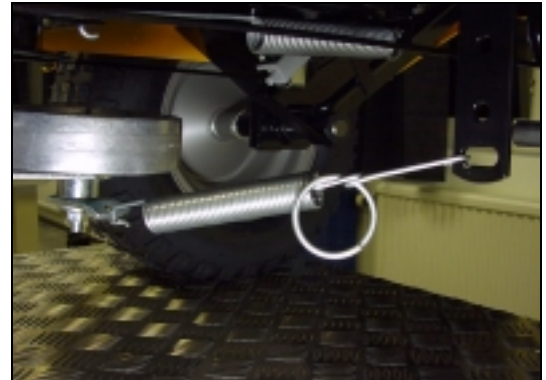
1. Unhook the spring.



Warning!

If the machine is to be moved when the belt is dismantled the belt tensioning spring must be fixed up under the machine so that it does not catch on anything and become damaged.

2. Work off the belt.



Assembly of belt, articulation point - deck

Assemble in reverse order.

On Senator, President, Royal and Pro 16, it is often easier to get the belt on the articulation belt pulley by pulling slightly on the power take-off engagement lever to disengage the power take-off brake. However, pulling too much will tighten the belt so much that it will not make it any easier.



Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of PTO brake	Senator, President, Royal and Pro 16	5	7.4

7.4 Adjustment of PTO brake

Senator, President, Royal, Pro 16

The function of the power take-off brake is influenced by several different adjustments and dimensions.

Adjusting influences both the power take-off engagement and the power take-off brake, and must always be conducted thoroughly.

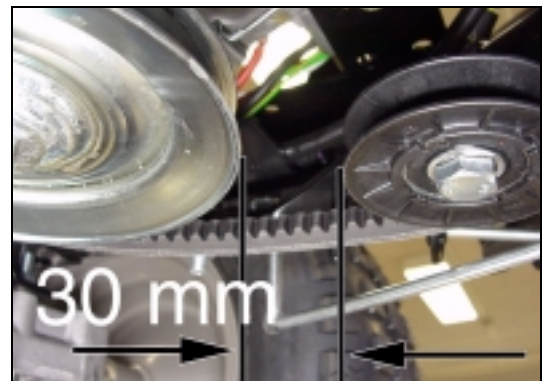
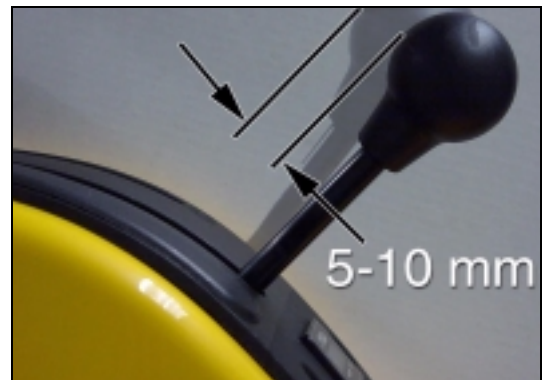
Warning!



The power take-off brake is part of the machine's safety system. It is therefore especially important that it is checked and adjusted correctly.

Procedure

1. Disengage the power take-off. Check that there is a clearance of 5-10 mm in the power take-off engagement lever before the tensioning arm begins to move. Release the tension in the wire if necessary.
2. Measure the distance between the tension pulley and the engine belt pulley. The distance should be 25-35 mm.



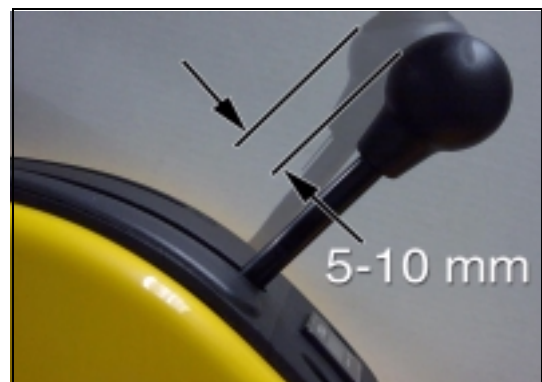
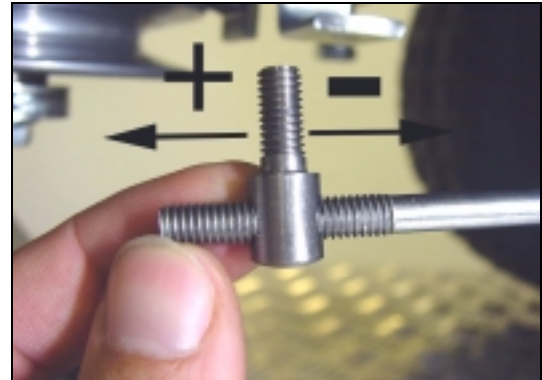
Warning!



It is important that the movement of the tensioning arm is always stopped by the brake pad, and not by the engagement wire. If the wire brakes the movement, the braking capacity can be completely lost when the parts become worn.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of PTO brake	Senator, President, Royal and Pro 16	6	7.4

3. Adjust the distance between the tension pulley and the engine belt pulley by moving the nipple on the brake rod. Adjust towards + to increase the distance between the tension pulley and the engine belt pulley, or towards - to reduce.
4. Check again that the power take-off engagement wire has a clearance of 5-10 mm at the engagement lever.
5. Engage the power take-off and check that the brake pad no longer brakes the articulation belt pulley in disengaged position. If the brake pad still brakes the belt pulley, move the nipple some more.
6. The brake pad will never completely leave the groove in the belt pulley. When the brake is correctly adjusted the brake pad should be pulled out approx. 1 mm from the innermost position.
7. Disengage the power take-off and check that the power-take off brake works.
If everything is correctly adjusted the brake should be applied just enough for the articulation belt pulley to be turned round by hand only with extreme force.



Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt pulley/belt tensioner	All	7	7.5

7.5 Replacement of belt pulley/belt tensioner

Dismantling of belt pulley/belt tensioner

Preparations

Dismantling of belt, articulation point - deck, see section 7.3.

Dismantling of belt, engine - articulation point, see section 7.1 or 7.2.

Procedure

1. Dismantle the screw that secures the pulley on the centre shaft.
The upper screw may come loose instead of the lower one. In which case remove the top screw and drop a little thread-locking agent on it. Tighten the screw again. Wait until the thread-locking agent has hardened, and then try again.
2. Dismantle the tensioning arm and belt pulley.
3. Check the condition of the bearings by rotating them with a finger. Replace if needed.
4. Tap out the bearings. Check whether the spacer between the bearings is worn, and replace if necessary.
5. Clean the inside of the belt pulley to remove anything that could damage the new bearings.

Note!

Bearings should always be pressed in place.

6. Press in the new bearings.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt pulley/belt tensioner	All	8	7.5

Assembly of belt pulley/belt tensioner

1. Assemble the parts on the centre shaft.
2. Tighten the screws to the correct torque and then check that the tension pulley arm runs easily and that the belt pulley rotates without resistance.

Follow-up work

Assembly of belt, engine - articulation point, see section 7.1 or 7.2.

Assembly of belt, articulation point - deck, see section 7.3.

Adjustment of PTO brake, see section 7.4.

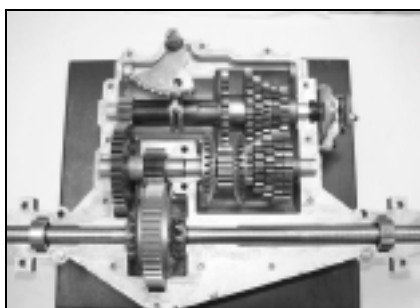
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Chassis and body	All	1	8

8 Transmission

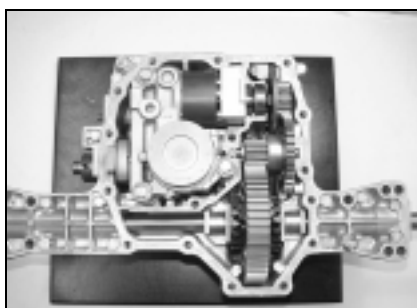
Senator is equipped with one manual 5-1 speed gearbox of the inline type. Gear changing is carried out with a hand control placed on the control panel. Disengaging and braking are carried out with a combined control placed to the left of the steering console. The brake is a conventional disc brake mounted on the gearbox. The disengaging device operates by reducing the tension on the drive belt between the engine and gearbox.

President, Royal, Pro16, Pro18 and Pro20 are all equipped with variable hydrostatic transmissions. The machine's forward drive is regulated with a foot pedal placed to the right of the steering console.

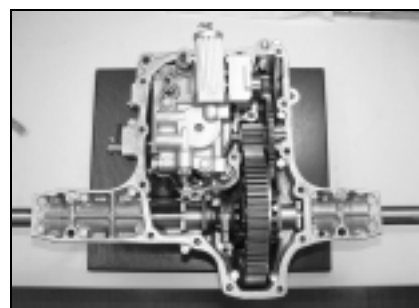
The brake, which requires no maintenance, is built into the hydrogear and is a disc brake in an oil bath. The brake is normally only used as a parking brake and is activated by the combined brake and clutch pedal. The parking brake can be locked in activated position with an easily accessible lever by the steering console.



Gearbox Senator



Hydrogear K46, President, Royal



Hydrogear K66, Pro 20

CONTENTS

8	Function	2
8.1	Oil change, gearbox, Senator	3
8.2	Oil change, hydrogear K46, President and Royal	4
8.3	Oil change, hydrogear K62, Pro 16 and Pro 18.	6
8.4	Oil change, hydrogear K66, Pro 20	9
8.5	Replacement of gearbox, Senator.	12
8.6	Replacement of hydrogear, President, Royal, Pro 16, Pro 18 and Pro 20	13
8.7	Replacement of belt, engine - transmission, Senator, President and Royal	15
8.8	Replacement of belt, engine - hydrogear, Pro 16	17
8.9	Replacement of belt, engine - hydrogear, Pro 18 and Pro 20	18

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Transmission	All	2	8

8 Function

Senator

Senator is equipped with one manual 5-1 speed gearbox of the inline type.

Gear changing is carried out with a hand control placed on the control panel.

Disengaging and braking are carried out with a combined control placed to the left of the steering console. The brake is a conventional disc brake, mounted on the gearbox.

The disengaging device operates by reducing the tension on the drive belt between the engine and gearbox.

President, Royal, Pro16, Pro18, Pro20

President, Royal, Pro16, Pro18 and Pro20 are all equipped with variable hydrostatic transmissions. The machine's forward drive is regulated with a foot pedal placed to the right of the steering console.

The brake, which requires no maintenance, is built into the hydrogear and is a disc brake in an oil bath. The brake is normally only used as a parking brake and is activated by the combined brake and clutch pedal. The parking brake can be locked in activated position with an easily accessible lever by the steering console.

To avoid extreme loads, which can occur if the driver brakes while also pressing down the hydrogear pedal, there is a disengaging device for the hydrostatic transmission. The disengaging device operates by reducing the tension on the drive belt between the engine and hydrogear.

The hydrogear can also be disengaged internally, which is useful if the machine is to be moved with the engine switched off. The internal disengaging is done with the lever under the frame on the left-hand side of the machine.



Warning!

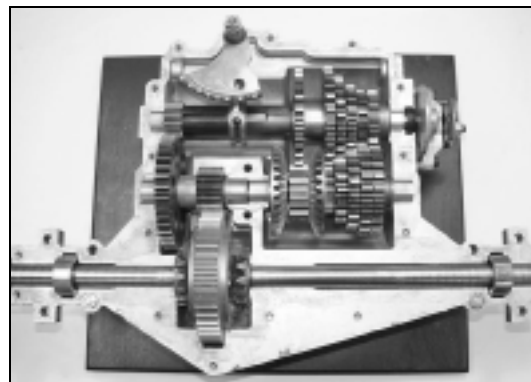
Machines with hydrogears must not be towed behind a vehicle, since this can result in damage to the transmission.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, gearbox	Senator	3	8.1

8.1-4 Oil change

8.1 Senator, gearbox

As a rule the oil in the gearbox is never changed. However, new oil should always be used if the gearbox has been repaired. The oil level must be checked at regular intervals if oil leakage occurs, and replenished with new oil.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, hydrogear K46	President and Royal	4	8.2

8.2 President, Royal, hydrogear K46

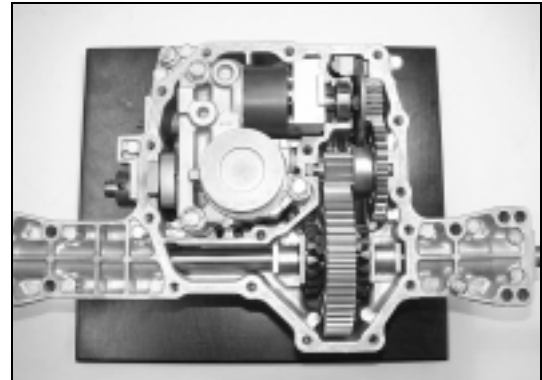
As a rule it is not necessary to change the oil in this hydrogear. However, the oil must be changed if it suspected to have become contaminated with dirt or water.

As a precautionary measure the oil can be changed if the machine undergoes a complete overhaul (replacement of engine).

The hydrogear contains an oil filter. This filter should only be replaced if it is necessary to open the hydrogear in conjunction with repair work.

Note!

Stiga recommends that repairs to the hydrogear are only conducted by persons with special competence in this area, since incorrect handling of the hydrogear's components will considerably reduce its service life or lead to malfunctioning.



Preparations

1. Run the machine warm.



Warning!

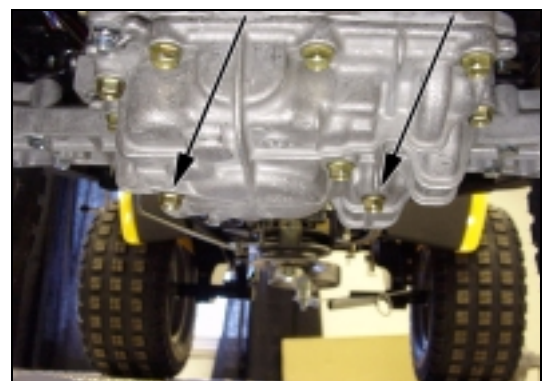
It is extremely important that no dirt gets into the hydrogear, since this will considerably reduce its service life. Only use new oil of good quality, from clean and sealed containers.



Warning!

Engine parts become very hot when driving. Observe caution!

2. Place a suitable catch pan under the hydrogear and remove the oil plugs.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, hydrogear K46	President and Royal	5	8.2

3. Drain off all the oil. Check the seals before the oil plugs are replaced. Replace the oil plugs.
4. Remove the oil filler hose. Fill with oil to a height of 20 mm below the upper edge of the filler hose.

Note!

The oil level should be 20 mm below the edge of the hydrogear housing. Not 20 mm from the edge of the hose, since this does not leave sufficient space for expansion when the oil becomes hot.

Note!

It takes a while before the complete hydrogear is filled with oil. For this reason wait a few minutes, and check the oil level again before starting the engine.

4. Fit the venting hose.

Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, hydrogear K62	Pro 16 and Pro 18	6	8.3

8.3 Pro 16, Pro 18, Hydrogear K62

The oil should be changed in accordance with the service schedule.

The oil must also always be changed if it is suspected to have become contaminated by dirt or water.

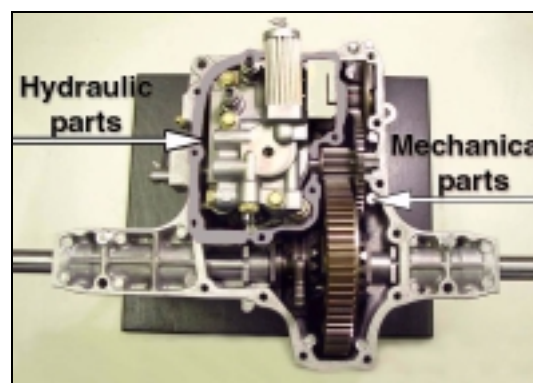


Warning!

The oil plugs under the hydrogear must not be removed! If they are, parts of the hydrogear will not be filled with oil! The oil should always be drained through the plastic plug in the back of the hydrogear.

The hydrogear consists of two parts. One part includes pump, motor and oil filter (hydraulic part). The other part includes the disc brake, gear wheel, differential and differential lock (gearbox part).

To simplify venting, the oil is only changed in the hydraulic part since this sets the highest requirements for the oil.



Warning!

Because of the way the hydrogear is designed, after repairing the hydrogear oil must also be filled through the filler plug on the gearbox part. This design implies that oil should always be drained off through the plastic plug in the back of the hydrogear. Never remove the oil plugs under the hydrogear.

The hydrogear contains an oil filter. This filter should only be replaced if it is necessary to open the hydrogear in conjunction with repair work.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, hydrogear K62	Pro 16 and Pro 18	7	8.3

Note!

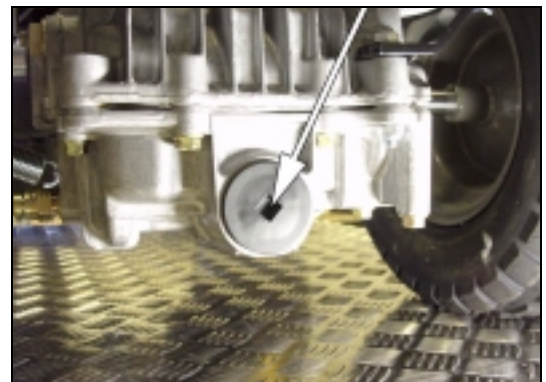
Stiga recommends that repairs to the hydrogear are only conducted by persons with special competence in this area, since incorrect handling of the hydrogear's components will considerably reduce its service life or lead to malfunctioning.

**Warning!**

The design of the hydrogear implies that oil should always be drained off by removing the plastic plug in the back of the hydrogear. Never remove the oil plugs under the hydrogear.

Procedure

1. Place a suitable catch pan under the hydrogear. Remove the plastic plug in the back of the hydrogear.

**Warning!**

It is important that no dirt gets into the hydrogear, since this will damage it. Always use new oil of good quality, from clean and sealed containers.

2. Fill the expansion tank with oil of grade 20W50 (or 10W40).
3. Lift up the front wheels of the machine 35-40 cm so that the oil will run more easily into the hydrogear.
4. Wait a while until the oil level has dropped, and top up with more oil. A total of approx. 1.4 litres of oil of grade 20W50 (or 10W40) is needed.
5. Start the machine and allow it to idle for a few minutes. Check the oil level. Top up if necessary.
6. Check if any leakage has occurred.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, hydrogear K62	Pro 16 and Pro 18	8	8.3

7. Check the oil level.

Note!

The oil level can drop during the first few hours of use after changing the oil. Inform the customer of this. Urge the customer to check the oil level in the expansion tank after driving for a few hours.



Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, hydrogear K66	Pro 20	9	8.4

8.4 Pro 20, Hydrogear K66

The oil should be changed in accordance with the service schedule.

The oil must also always be changed if it is suspected to have become contaminated by dirt or water.

The oil is also used for the power assisted steering.

The oil filter should always be replaced when changing the oil in the hydrogear.

Both the filter in the hydrogear, and the external filter.

The filter in the hydrogear is easily accessible behind the black plastic plug.



Warning!

The oil plugs under the hydrogear must not be removed!

If they are, parts of the hydrogear will not be filled with oil!

The oil should always be drained through the plastic plug in the back of the hydrogear.

The hydrogear consists of two parts. One part includes the pump, motor and oil filter (hydraulic part). The other part includes the disc brake, gear wheel, differential and differential lock (gearbox part).

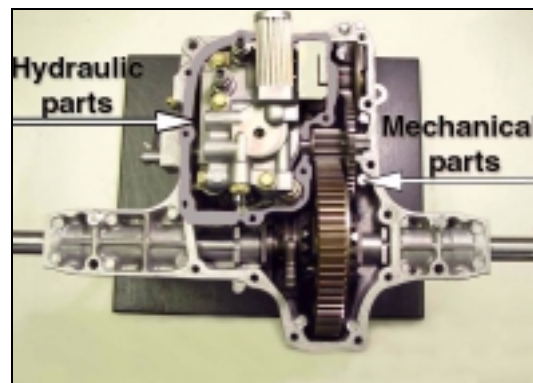
To simplify venting, the oil is only changed in the hydraulic part since this sets the highest requirements for the oil.



Warning!

After repairing the hydrogear, oil must also be filled through the filler plug on the gearbox part.

The design of the hydrogear implies that oil should always be drained through the plastic plug at the back of the hydrogear. Never remove the oil plugs under the hydrogear.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, hydrogear K66	Pro 20	10	8.4

Note!

Stiga recommends that repairs to the hydrogear are only conducted by persons with special competence in this area, since incorrect handling of the hydrogear's components will considerably reduce its service life or lead to malfunctioning.

**Warning!**

The design of the hydrogear implies that oil should always be drained off by removing the plastic plug in the back of the hydrogear. **Never** remove the oil plugs under the hydrogear.

Procedure

1. Place a suitable catch pan under the hydrogear. Remove the plastic plug in the back of the hydrogear and pull out the oil filter.

**Warning!**

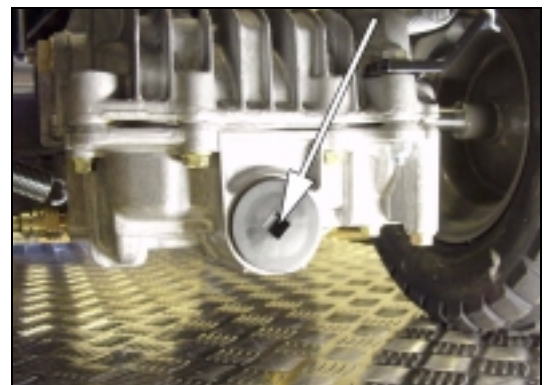
It is extremely important that no dirt gets into the hydrogear, since this will damage it.

2. Put the new oil filter in place and replace the plastic plug.

Note!

Only use new oil of good quality, from clean and sealed containers.

3. Fill the expansion tank with oil of grade 20W50 (or 10W40).
4. Lift up the front wheels of the machine 35-40 cm so that the oil will run more easily into the hydrogear.
5. Wait a while until the oil level has dropped, and top up with more oil. A total of approx. 1.4 litres of oil is needed.
6. Dismantle the oil filter for the power assisted steering.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Oil change, hydrogear K66	Pro 20	11	8.4

Note!

The oil filter must not be tightened with a tool, since this can damage the oil filter housing and result in leakage.

7. Apply a thin film of oil on the rubber packing on the new oil filter, and tighten it by hand.
8. Start the machine and allow it to idle for a few minutes.
9. Check if any leakage has occurred.
10. Check the oil level.

Note!

The oil level can drop during the first few hours of use after changing the oil. Inform the customer of this. Urge the customer to check the oil level in the expansion tank after driving for a few hours.

Follow-up work

Test driving.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of transaxle	Senator	12	8.5

8.5-6 Replacement of transaxle

8.5 Senator

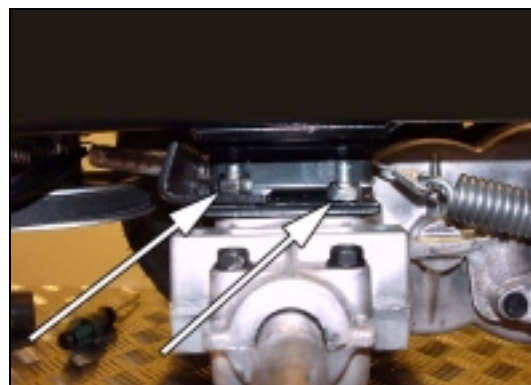
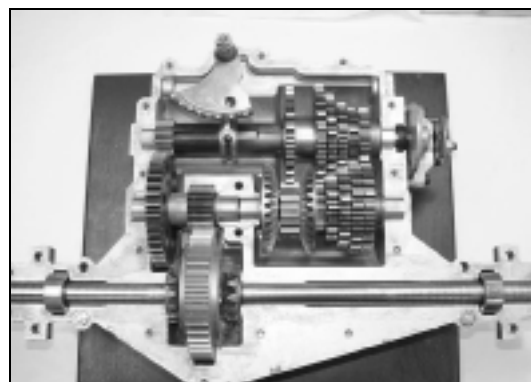
Dismantling of gearbox

Preparations

Dismantling of belt, engine - transmission, see section 8.7.

Procedure

1. Block up the rear frame of the machine and remove both rear wheels.
2. Remove the angle link from the control wire at the attachment to the gearbox.
3. Separate the brake wire and brake spring. Remove the return spring for the brake.
4. Remove the screws that hold the gearbox at the frame.



Assembly of gearbox

Assemble in the reverse order.

Follow-up work

Assembly of belt, engine - transmission, see section 8.7.

Adjustment of brake, see section 5.5.

Adjustment of clutch, see section 5.6.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of transaxle	President, Royal, Pro 16, Pro 18 and Pro 20	13	8.6

8.6 President, Royal, Pro 16, Pro 18, Pro 20

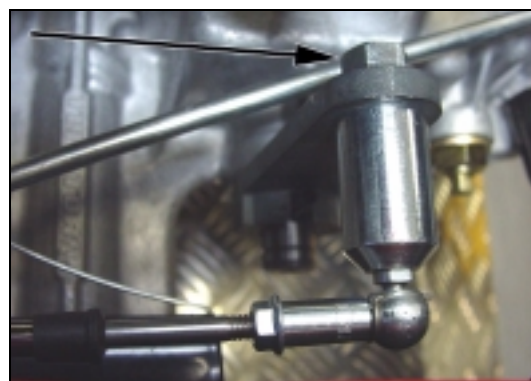
Dismantling of hydrogear

Preparations

Dismantling of belt, engine - transmission, see section 8.7, 8.8 or 8.9.

Procedure

1. Block up the rear frame of the machine and remove both rear wheels.
2. Dismantle the pull bar to disengage the hydrogear.
3. Dismantle the pull bar and the spring for the parking brake.
4. Dismantle the control wire by removing the screw where the angle joint attaches at the control arm on hydrogear.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of transaxle	President, Royal, Pro 16, Pro 18 and Pro 20	14	8.6

5. Disconnect the hydraulic hoses for the power assisted steering.
(Only applies to Pro 20).



7. Remove the screws that hold the hydro-gear at the frame.



Assembly of hydrogear, President, Royal, Pro 16, Pro 18, Pro 20

Assemble in the reverse order.

Note!

Do not forget the shims on Pro 16, Pro 18 and Pro 20.

Follow-up work

Adjustment of brake and clutch, see section 5.8. Adjustment of control wire, see section 5.3.

Assembly of belt, engine - transmission, see section 8.7, 8.8 or 8.9.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt, engine - transmission	Senator, President and Royal	15	8.7

8.7-9 Replacement of belt, engine - transmission

8.7 Senator, President, Royal

Dismantling of belt, engine - transmission

Preparations

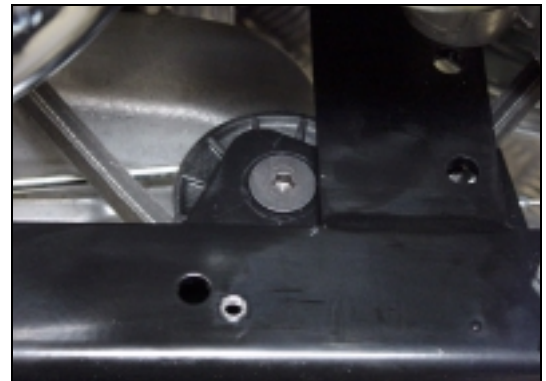
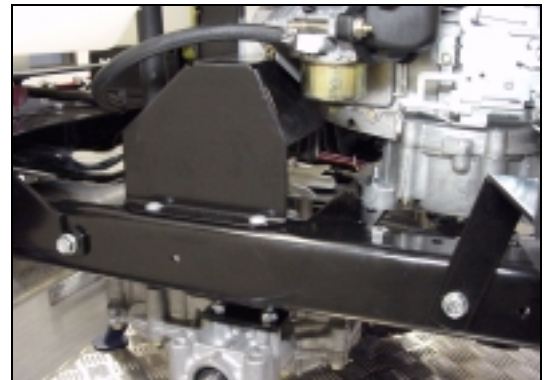
Dismantling of belt, engine – articulation point, see section 7.1.

Procedure

1. Remove the cover over the exhaust pipe (President only).
2. Activate the parking brake.
3. Remove the tension pulley for the clutch.
4. Work off the belt, engine - transmission, at the engine pulley and then at the pulley on the transmission.

Note!

Make sure not to damage the fan blade on the pulley. A damaged fan blade can result in the hydrogear overheating (not applicable for Senator).



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt, engine - transmission	Senator, President and Royal	16	8.7

Assembly of belt, engine - transmission

Assemble in the reverse order.

Follow-up work

Adjustment of brake, see section 5.5 or 5.8.

Adjustment of clutch, see section 5.5 or 5.8

Assembly of belt, engine – articulation
point, see section 7.1.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt, engine - transmission	Pro 16	17	8.8

8.8 Pro 16

Dismantling of belt, engine - hydrogear

Preparations

Dismantling of belt, engine - articulation point, see section 7.1.

Procedure

1. Block up the rear frame and remove the right rear wheel.
2. Remove the nut for the tension pulley.
Activate the parking brake and take off the drive belt from the tension pulley.
Release the parking brake.

3. Release the screws that hold the hydro-gear.
The screws do not need to be removed, just unscrewed a few turns.

4. Work off the belt, engine - transmission.

Note!

Make sure not to damage the fan blade on the pulley. A damaged fan blade can result in the hydrogear overheating.

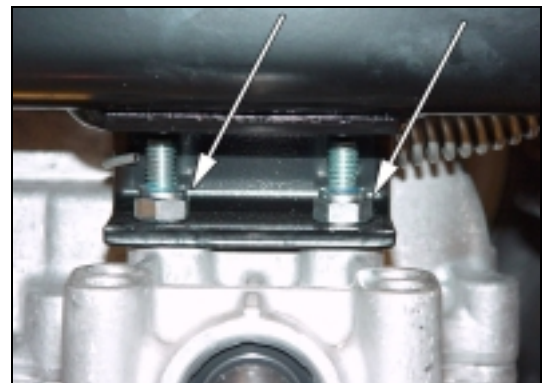
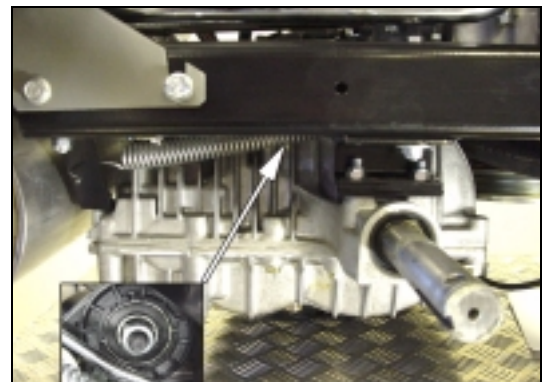
Assembly of belt, engine - hydrogear

Assemble in the reverse order.

Follow-up work

Adjustment of brake and clutch, see section 5.8.

Assembly of belt, engine - articulation point, see section 7.1.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt, engine - hydrogear	Pro 18 and Pro 20	18	8.9

8.9 Pro 18, Pro 20

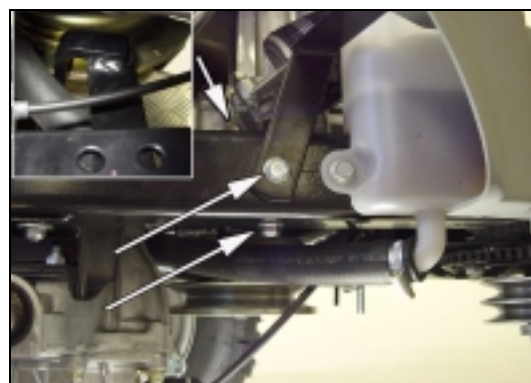
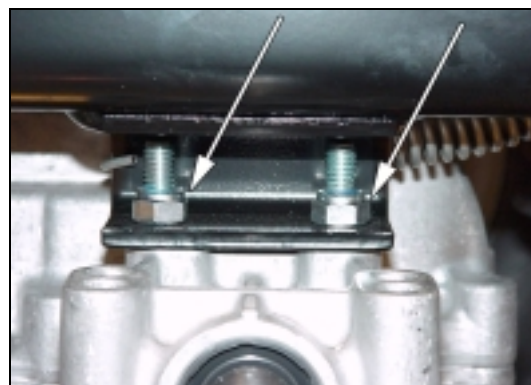
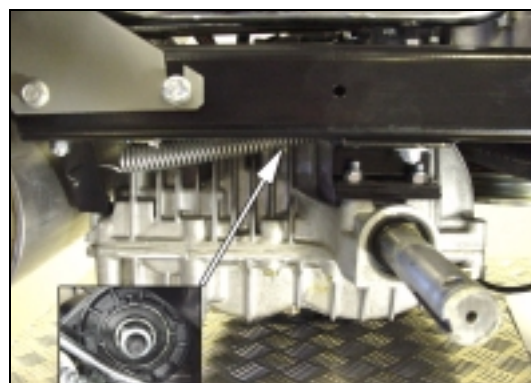
Dismantling of belt, engine – hydrogear

Preparations

Dismantling of belt, engine - articulation point, see section 7.2.

Procedure

1. Block up the rear frame and remove the right rear wheel.
2. Remove the nut for the tension pulley. Activate the parking brake and take off the drive belt from the tension pulley. Release the parking brake.
3. Release the screws that hold the hydro-gear.
The screws do not need to be removed, just unscrewed a few turns.
4. Remove the screws that hold the support rod. Remove the support rod.



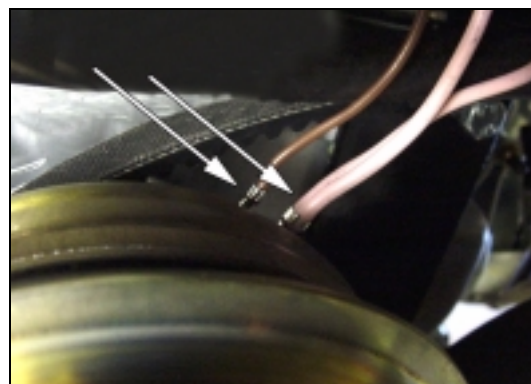
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt, engine - hydrogear	Pro 18 and Pro 20	19	8.9

5. Remove the electrical contacts for the Mag-Stop coupling.

6. The belt, engine - transmission, can now be removed.

Note!

Make sure not to damage the fan blade on the pulley. A damaged fan blade can result in the hydrogear overheating.



Assembly of belt, engine - hydrogear

Assemble in the reverse order.

Follow-up work

Assembly of belt, engine - articulation point, see section 7.2.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Mower deck Multiclip 107	All	1	9

9 Mower deck Multiclip 107

The deck is equipped with two contra-rotating, synchronised blades.

The bearing boxes also have a different design in comparison with earlier models.

In addition, 107M is provided with a quick-coupling to simplify lifting up and cleaning of the deck.



CONTENTS

9.1	Adjustments and assembly on delivery of Multiclip 107	1
9.2	Replacement of blades	4
9.3	Adjustment of belt tension	5
9.4	Replacement of deck belt	7
9.5	Replacement of pulley	9
9.6	Replacement of bearing box	11

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustments and assembly on delivery of	All	2	9.1

9.1 Adjustments and assembly on delivery of Multiclip 107

All decks are tested prior to delivery and are delivered as completely assembled as possible. This ensures that assembly on delivery is rapid and simple.

Note!

Multiclip 107 can be installed on older models of Stiga Park. However, certain adjustments must be made irrespective of which machine the deck is to be installed on. This is because certain models are fitted with 17 inch wheels, while other machines have 16 inch wheels.

Assembly on delivery

1. Take the deck out of the box.
2. Fit the deck arms in the front screws.

Note!

One of the deck arms is in a separate box in the bottom of the main box.

3. Assemble the deck on the machine.



4. To compensate for the different wheel sizes the deck is fitted with an adjusting function.

Note!

- The adjustment of the mower deck's parallelism is extremely important for the mowing results.
- The markings only serve as a guide.
- The mower deck's parallelism must always be measured on a flat surface, e.g. a concrete floor.



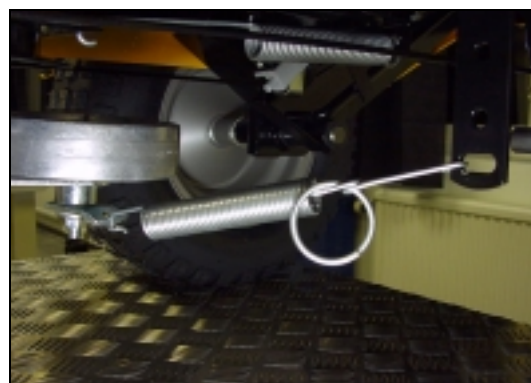
Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustments and assembly on delivery of	All	3	9.1

5. Adjust the mower deck so that it is completely level.

Note!

As a rule the best mowing results are obtained if the deck is completely parallel with the ground, but different conditions can require special adjustment.

6. Work on the belt, deck - articulation point, and fit the spring.



Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of blades	All	4	9.2

9.2 Replacement of blades

The deck with contra-rotating blades has a right blade and a left blade.

Note!

If the blades are fitted incorrectly this will lead to inferior mowing results.

For this reason carefully check that the blades are fitted correctly.

Procedure



Warning!

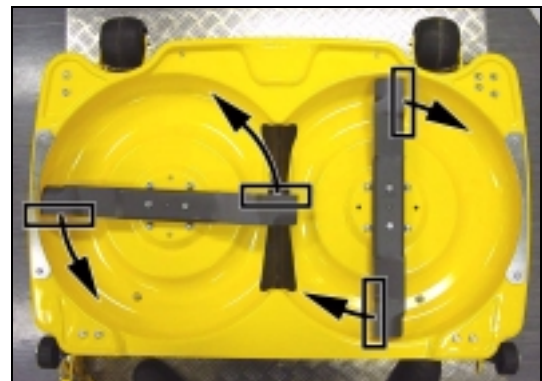
The blades are sharp. Always wear gloves when working with the blades to avoid injury.

1. Release the screws that hold the blades, and remove the blades.
After removing the blades, check whether the shafts are damaged. This is best done by rotating the shafts to see if they are out of true.

Note!

The deck has contra-rotating blades. It is important that the blades are fitted correctly, since the deck has a right blade and a left blade.

2. Fit the blades with the raised edge towards the blade attachment.
The sharpened surfaces of the blades are marked in the illustration.
3. Tighten the screws to the correct torque.



Follow-up work

Test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of belt tension	All	5	9.3

9.3 Adjustment of belt tension

Multiclip 107 is provided with a double-sided timing belt. The tension of the belt is adjusted by moving the clamping cradle with an adjusting screw.

Note!

The tension of the belt should be checked and adjusted in accordance with the service schedule to ensure the best performance and service life of the parts.

Procedure

Note!

The tension of the belt must always be checked when the screw to the attachment has been tightened, since the tension is affected when the screw is tightened.

1. Check the tension of the belt by pressing in the belt with a force of 30-35N (3-3.5 kg). The belt should give 10 mm.
2. Follow steps 3-6 if the tension needs adjusting.

3. Release the nuts 1, 2 and 3.

Note!

The nuts should only be released, not removed.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Adjustment of belt tension	All	6	9.3

4. Tension the belt by adjusting the nut A.
Adjust the nut to the right to reduce the tension, and to the left to increase the tension.
5. When the belt has the correct tension, tighten the lock nut on the adjusting screw and tighten the nuts that hold the tension cradle.
6. Check the tension after the nuts have been tightened.



Follow-up work

Test driving. Check the tension after test driving.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of deck belt	All	7	9.4

9.4 Replacement of deck belt

Dismantling of deck belt

Preparations

Dismantling of belt, articulation point - deck, see section 7.3.

1. Release the nuts 1, 2 and 3.

Note!

The nuts should only be released, not removed.

2. Release the tension of the belt by removing the nut A.
Screw in the lock nut B approx. 30 mm on the adjusting screw.



Warning!

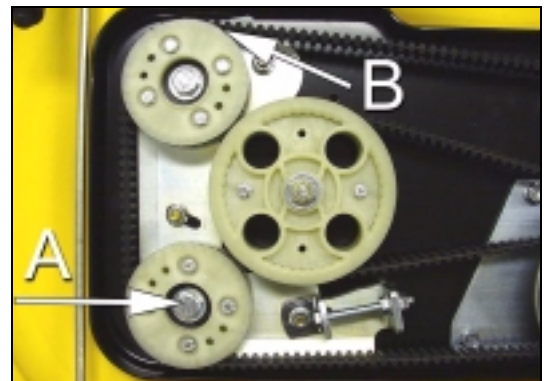
The belt must not be severely bent or forced over an edge, since this will damage the glass fibre cord in the belt.

3. Move the clamping cradle as far to the right as possible (A) and carefully work the belt off the return pulley B.

Note!

Always work off and on the belt at the upper return pulley, since this pulley has lower flanges than the large pulleys.

4. Pull the clamping cradle as far to the left as possible and remove the belt.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of deck belt	All	8	9.4

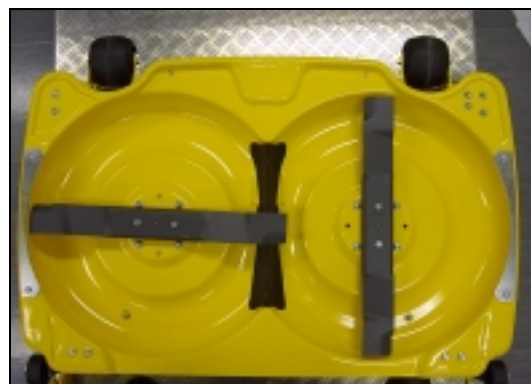
Assembly of deck belt



Warning!

The blades in this deck are synchronised. When fitting the belt check that the blades are displaced 90 degrees in relation to each other.

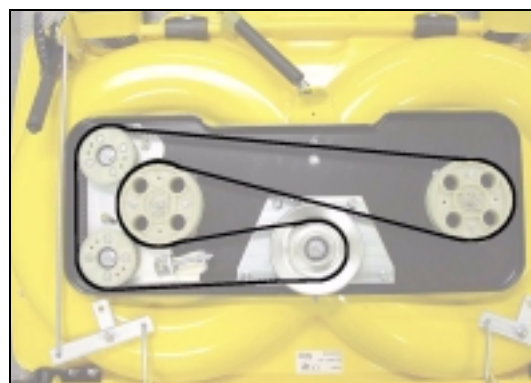
If the blades are at the wrong angle this can lead to severe damage to both the blades and the deck.



1. Assemble in the reverse order.
2. Check that the blades are at the correct angle before test driving.
3. The belt must always be fitted as in the illustration.

Follow-up work

Adjustment of belt tension, see section 9.3.



Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt pulleys	All	9	9.5

9.5 Replacement of pulleys

There are three different types of pulleys on the unit. Firstly the pulleys on the intermediate shaft **A**. These are journalled with two ball bearings. To remove these pulleys from the shaft the attachment plate's four screws must be removed, since the shaft is secured with a nut on the underside of the plate.

The two return pulleys **B** and **C** are journalled with one ball bearing each. These shaft are also secured with a nut from the underside.

The large pulleys **D** and **E** are mounted directly on the blade shafts.



Warning!

To avoid breakdowns it is important that the nut on the blade shaft is tightened to the correct torque.

The nut must always be tightened to a torque of 40Nm.

Do not overtighten the nut since this will damage the thread



Dismantling of pulley on blade shaft

Preparations

Dismantling of deck belt, see section 9.4.

Procedure



Warning!

The blades are sharp. Always wear gloves when working with the blades to avoid injury.

1. Release the nut on the blade shaft and remove the pulley.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of belt pulleys	All	10	9.5

2. Remove the key and file off the burrs on the edge of the key groove before taking the shaft out.
3. Pull out the shaft. Check whether the shaft is damaged. Replace if necessary.



Assembly of pulley on blade shaft

Procedure

Note!

The pulley is manufactured of a glass fibre reinforced composite material. This material is very resistant to abrasion. However, knocks and blows, and careless handling can reduce the service life of the parts.

1. Grease the shaft and slip it into the bearing box. Replace the key. Replace the washers and carefully tap the pulley on with a rubber mallet.
2. Tighten the nut to the correct torque (40Nm). Do not overtighten the nut since this will damage the thread.

Follow-up work

Assembly of deck belt, see section 9.4.

Edition	Chapter	Refers to model	Page	Chapter
2000-03-31	Replacement of bearing box	All	11	9.6

9.6 Replacement of bearing box

The bearing boxes are mounted with through bolts between the transmission plate and cover. This ensures a very stable attachment of the bearing boxes.

Dismantling of bearing box

Preparations

Dismantling of pulley on blade shaft, see section 9.5.

Procedure

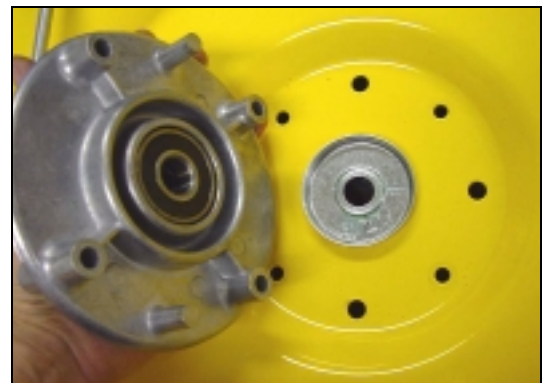
1. Remove the 8 through screws that hold the bearing boxes. Do not forget to remove the screws that hold the guide blade and lifting lug.
2. Lift off the transmission plate.
3. The bearing boxes can now be dismantled.



Assembly of bearing box

Procedure

1. Replace the bearing box. Do not forget the protective washer. Fit the guide pins in the holes. It makes no difference which way the guide pins are turned since they are only used as a guide during assembly.
2. Place the transmission plate in position and tighten the screws for the bearing housings, lifting lug and guide blade.



Follow-up work

Assembly of pulley on blade shaft, see section 9.5.